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FLOOD INSURANCE STUDY

COMPLETED
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CITY OF PLANO, TEXAS
COLLIN AND DENTON COUNTIES

FEBRUARY 19, 1986

ORIGINAL

Federal Emergency Management Agency

COMMUNITY NUMBER - 480140

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Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

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FLOOD INSURANCE STUDY
CITY OF PLANO, TEXAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Plano, Collin and Denton Counties, Texas, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in their efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The original hydrologic and hydraulic analyses for the Flood Insurance Study for the City of Plano was done by the Fort Worth District of the U. S. Army Corps of Engineers (COE) for the Federal Emergency Management Agency (FEMA) under Inter-Agency Agreement No. IAA-H-7-76, Project Order No. 21; and Inter-Agency Agreement No. IAA-H-10-77, Project Order No. 2.

A revision was completed in March 1984 to revise the hydrologic and hydraulic analyses for Stream 5B13, Stream 2I9, and Prairie Creek. The work for Stream 5B13 and Stream 2I9 was performed by Shimek, Jacobs, and Finklea. The work for Prairie Creek was revised by Albert Halff Associates.

In this study, revisions were made to update the hydrologic and hydraulic analyses for Pittman Creek (formerly Pittman Creek and West Fork Pittman Creek) and North Fork Pittman Creek (formerly Pittman Creek). The work for these revisions were performed by Shimek, Jacobs, and Finklea and was completed in June 1984.

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1.3 Coordination

On July 15, 1976, an initial Consultation and Coordination Officer's (CCO) meeting, attended by representatives of FEMA, the Texas Department of Water Resources (TDWR), the COE (the study contractor), and the city, was held to identify the streams requiring detailed study. On July 30, 1976, the city was provided maps showing streams to be studied. The maps were returned with a request that 32 additional streams be studied in detail. Twenty of the streams were added to the study; the 12 that were not included had drainage areas of less than one-half square mile. The Soil Conservation Service (SCS), the U. S. Geological Survey (USGS), the State Department of Highways and Public Transportation, and the TDWR were contacted for information related to the study.

On January 30, 1979, the results of the study were reviewed at the final CCO meeting attended by representatives of the city, the study contractor, TDWR, and FEMA.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of Plano, Collin and Denton Counties, Texas. The area of study is shown on the Vicinity Map (Figure 1).

The following flooding sources were studied by detailed methods: Rowlett Creek, Cottonwood Creek, Stream 2D8, Stream 2D9, Stream 2D10, Stream 2G1, Brown Branch, Stream 2D11, Bowman Branch, Stream 2D12, Stream 2D15, Russell Creek, Beck Branch, Spring Creek, Stream 2I9, Stream 2I12, Stream 2I11, Pittman Creek, Stream 2H3, North Fork of Pittman Creek, Prairie Creek, Stream 2L1, Stream 5B13, Tributary to Stream 5B13, Stream 5B14, McKamy Branch, White Rock Creek, Stream 5B18, Stream 5B19, Stream 5B20, Stream 5B21, Stream 5B22, Stream 5B23, Stream 5B24, Stream 5B25, Stream 5B26, Stream 5B27, Stream 5B28, Stream 5B29, Stream 5B30, Stream 5B31, Stream 5B32, Stream 5B33, Stream 5B34, Stream 5B35, and Stream 5B36. In the March 1984 revision, changes to the corporate limits and channelizations on Stream 5B13, Stream 2I9, and Prairie Creek were incorporated. In this study, channelizations and a redesignation of Pittman Creek and its tributary West Fork Pittman Creek were revised due to a more up-to-date hydrologic analysis. The Pittman Creek main stem now encompasses the former West Fork Pittman Creek. The former northern portion of Pittman Creek is now designated as its tributary, North Fork Pittman Creek. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

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FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

APPROXIMATE SCALE

4 0 4 8 12 MILES

VICINITY MAP

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The areas studied by detailed methods covered flood hazard areas needing analysis; all other areas are shown as approximate studied areas. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the City of Plano.

2.2 Community Description

Plano is located in north-central Texas, on the south edge of Collin County, immediately adjacent to Dallas County. Plano is an integral part of a vast urban region consisting of the combined Dallas and Fort Worth Metropolitan areas. The Texas Municipal League estimated the 1976 population of Plano as 53,000, an increase of 35,128 over the 1970 population of 17,872. This represents an increase of 196 percent in 6 years.

The original settlements in the Plano area date back to the 1840's and are related to the colonization efforts of the early days of the Republic of Texas. By the 1850's, the community showed signs of development, having achieved mail service and a post office named Plano, a term erroneously thought to be Spanish for "plains". From the period of its incorporation until after World War II, a period of 75 years, Plano prospered as a trading center for the surrounding agricultural area. In addition to trade facilities, Plano became a center for agricultural service with cotton gins, a cottonseed oil mill, and similar facilities. As long as the Dallas-Collin County area in the vicinity of Plano remained predominantly agricultural, Plano continued as an agricultural trade center with a modest population. The economic character of Dallas County began to change from agricultural to an urban industrial base in the 1930's. The World War II industries, which located in the Dallas area, triggered a suburban expansion which is still in progress. Grand Prairie and Garland were the first suburban communities in Dallas County to experience the stimulus of the industrial expansion. In the 1950's, growth and industrial development spread to nearby Richardson. During the 1960's, Plano began to share generously in the region's population expansion. Most of the existing development in Plano lies in the central portion of the city. Rapid development is taking place throughout the city.

Most of the City of Plano is drained by Rowlett Creek and its tributaries, which are part of the East Fork of the Trinity River drainage system. The westernmost part of the city lies in the White Rock Creek drainage system which flows south through the City of Dallas to the main stem of the Trinity River.

The terrain of the Plano area is characteristic of the Blackland Prairie. The topography is gently rolling to almost level with well-incised narrow streams. The soils in the area are mainly of the Houston Black, Heiden,

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and Austin series. The native vegetation consists of bunch and short grasses with scattered mesquite trees on the uplands. Hardwoods, mainly made up of elm, hackberry, and pecan, occur along the streams.

The climate of the study area is warm, temperate, and humid. Summers are hot and winters are short and mild. Extremes of temperature and precipitation are of relatively short duration. The annual mean precipitation is approximately 35 inches. The mean relative humidity is 63 percent, and the average temperature is 65.8 degrees Fahrenheit (°F). The record temperature extremes range from a maximum 111°F in July 1954 to a minimum of -3°F in January 1930.

2.3 Principal Flood Problems

Plano has experienced few major flood problems in the past. This is caused primarily because the older portion of the city was developed on the high ground between Rowlett and Spring Creek and also that a large percentage of the development has occurred in the last few years.

Some flood damages were reported along Pittman Creek during the flood in March 1977. Total damages in this area were estimated at approximately $20,000. No estimate of frequency was available for this flood.

Historical flood information was collected from newspaper records; the Texas Department of Highways and Public Transportation; USGS stream gage records; flood plain information reports (References 1, 2, and 3); consulting engineers; and local residents. Large floods occurred in the Rowlett Creek watershed in May 1933, April 1942, May 1946, August 1947, June 1951, April 1957, July 1962, September 1964, and April 1966. These are the floods for which some data were available; other floods probably occurred for which no data were available.

In 1968, the USGS established a recording stream gage on Rowlett Creek at Highway 78 near Sachse, Texas, approximately 3.5 miles southeast of Plano. Historical information at the gage began with the flood of April 1942, which, estimated from high-water marks and backwater runs, had a peak discharge of approximately 60,000 cubic feet per second (cfs) and a recurrence interval of approximately once in 100 years. Drift observed in 1967 lodged on the Atchison, Topeka, and Santa Fe railroad bridge located 150 feet upstream of the gage indicated a discharge of approximately 50,000 cfs, probably in April 1966 or September 1964. The estimated recurrence interval for this flood would be approximately once in 50 years. No estimate of frequency was available for other historical floods on Rowlett Creek. The largest flood on White Rock Creek occurred in September 1964. This flood produced a peak discharge of 37,900 cfs at the USGS gage at Keller Springs Road, approximately 3 miles below Plano. This flood is estimated to have had a recurrence interval of approxi-

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mately once in 500 years at the gage. Other large floods on White Rock Creek are known to have occurred in April 1942, June 1949, July 1962, April 1966, May 1969, and December 1971; however, no estimate of frequency is available for these floods.

Most of the damages resulting from the previously mentioned floods were agricultural in nature. Little development existed on the flood plains until recently, and the city is now exercising more stringent land use controls. Figures 2 and 3 show the heights that would be reached by the respective floods on facilities existing within the flood plains considered in this study.

2.4 Flood Protection Measures

Structural flood protection measures in the City of Plano have been limited to short reaches of streams that were enlarged and/or straightened in connection with individual subdivision development and road construction.

The City of Plano regulates flood plain development through an ordinance which prohibits building in areas designated as flood plains unless such buildings have been approved by the City Council after it ascertained that such building is not subject to damage by flooding and would not constitute an encroachment.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

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FIGURE 2: Future flood heights on Spring Creek at Custer Road.

FIGURE 3: Future flood heights on Pittman Creek at Park Road.

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3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

The White Rock Creek and Rowlett Creek basins were divided into subareas, and synthetic unit and flood hydrographs were developed at selected locations. For the Rowlett Creek basin, flood hydrographs were routed from one discharge location to the next by the PULS routing method (Reference 4). Additionally, numerous headwater areas of less than 2 square miles were modeled using the rational method, where Q = CIA. The variables in this method are defined as follows: Q is the peak discharge in cfs, C is a runoff coefficient, I is the rainfall intensity in inches per hour for the watershed time of concentration, and A is the drainage area in acres.

The USGS established 4 recording stream gages on White Rock Creek during 1962 and 1963. Each of these gages is located below the area covered by this study. In 1968, the USGS established a recording stream gage on Rowlett Creek at Highway 78 in Garland. Historical flood information began with the flood of 1942, and historical discharge-frequency curves were developed at the gages. Peak discharges computed at the gages for existing urbanization with the synthetic hydrograph and PULS routing procedures agree reasonably with those of the historic discharge frequency curves. Historic flood reproductions on Rowlett Creek and White Rock Creek, as well as adjacent streams, were used as the basis for the adoption of Snyder's Cp 640 unit hydrograph coefficients. Technical Paper No. 40, Rainfall Frequency Atlas of the United States, was used in developing the 10-, 50-, and 100-year storms (Reference 5). The 500-year storm was based on extrapolated data. Frequency peak discharges were computed at selected locations.

A summary of the drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges." The decrease in peak discharge with an increase in drainage area for some streams is due to watershed shape and/or overbank storage effects.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
ROWLETT CREEK					
Below Cottonwood Creek	71.81	21,700	39,000	45,900	59,000
At State Highway 5	39.90	20,700	31,700	35,900	45,200
At Alma Road	26.27	18,400	26,900	30,500	38,500

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
COTTONWOOD CREEK					
At Betsy Lane	17.20	11,300	15,900	17,600	21,700
At Parker Road	15.02	11,500	15,500	17,100	21,100
STREAM 2D8					
Below Stream 2D9	2.04	4,250	5,800	6,400	8,000
Above Stream 2D9	1.53	4,150	5,600	6,200	7,800
At Jupiter Road	0.58	1,750	2,300	2,550	3,150
STREAM 2D9					
At confluence with Stream 2D8	0.51	1,550	2,100	2,300	2,800
STREAM 2D10					
At confluence with Stream 2D8	0.56	1,800	2,450	2,750	3,400
STREAM 2G1					
At confluence with Cottonwood Creek	2.95	5,100	7,100	8,000	10,200
BROWN BRANCH					
At U. S. Highway 75	1.04	2,250	3,100	3,450	4,350
STREAM 2D11					
At P Avenue	0.38	1,100	1,450	1,600	1,950
BOWMAN BRANCH					
At confluence with Brown Branch	1.54	2,700	3,700	4,100	5,100
At U. S. Highway 75	0.94	2,150	2,900	3,200	3,900
STREAM 2D12					
At confluence with Rowlett Creek	0.42	750	950	1,100	1,300
STREAM 2D15					
At confluence with Rowlett Creek	0.38	700	950	1,050	1,300

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
RUSSELL CREEK					
At State Highway 2478 (Custer Road)	2.21	4,350	6,100	6,800	8,600
500 feet below Katherine Road	1.16	2,950	4,050	4,550	5,700
BECK BRANCH					
At confluence with Rowlett Creek	4.12	5,300	7,500	8,400	10,700
SPRING CREEK					
At St. Louis Southwestern Railroad	14.60	13,900	19,300	21,700	27,500
At State Highway 2478	4.42	6,800	9,200	10,200	12,800
At Anna Lane	0.78	1,400	1,900	2,100	2,500
STREAM 2I9					
At confluence with Spring Creek	0.72	1,675	2,150	2,400	2,900
STREAM 2I12					
At confluence with Spring Creek	0.46	900	1,200	1,350	1,650
STREAM 2I11					
At confluence with Spring Creek	0.88	1,350	1,850	2,000	2,500
PITTMAN CREEK					
At State Highway 544 (West 15th Street)	3.05	4,900	6,800	7,600	9,700
At confluence of North Fork Pittman Creek	0.92	2,150	2,900	3,250	4,050
At Parker Road	0.48	1,650	2,250	2,500	3,150
STREAM 2H3					
At confluence with Pittman Creek	0.53	1,200	1,600	1,800	2,200
NORTH FORK PITTMAN CREEK					
At confluence with Pittman Creek	0.48	1,650	2,250	2,500	3,150

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
PRAIRIE CREEK					
At State Highway 544 (West 15th Street)	1.96	3,600	4,950	5,500	7,000
Park Boulevard	1.31	2,100	2,900	3,200	4,000
STREAM 2L1					
At confluence with Prairie Creek	0.73	1,650	2,250	2,550	3,150
STREAM 5B13					
At Atchison, Topeka, and Santa Fe Railway	0.49	1,020	1,333	1,490	1,843
TRIBUTARY TO STREAM 5B13					
At confluence with Stream 5B13	0.10	170	225	250	310
STREAM 5B14					
At Atchison, Topeka, and Santa Fe Railway	0.15	350	450	500	600
McKAMY BRANCH					
At Atchison, Topeka, and Santa Fe Railway	0.66	1,400	1,850	2,050	2,500
WHITE ROCK CREEK					
At State Highway 544	19.84	15,100	21,300	24,000	30,700
At Thompson Road	11.62	11,400	15,800	17,800	22,600
At State Highway 289 (Preston Road)	8.68	10,100	14,000	15,700	19,800
At State Highway 121	2.96	4,500	6,200	6,900	8,700
STREAM 5B18					
At Atchison, Topeka, and Santa Fe Railway	0.52	950	1,350	1,400	1,750
STREAM 5B19					
At confluence with White Rock Creek	0.51	800	1,100	1,200	1,450

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
STREAM 5B20					
At confluence with White Rock Creek	0.65	1,050	1,400	1,500	1,850
STREAM 5B21					
At confluence with White Rock Creek	0.78	1,350	1,800	2,000	2,450
Above Stream 5B22	0.25	550	750	800	1,000
STREAM 5B22					
At confluence with Stream 5B21	0.33	750	1,000	1,100	1,350
STREAM 5B23					
At confluence with White Rock Creek	0.43	700	950	1,050	1,250
STREAM 5B24					
At confluence with White Rock Creek	0.81	1,450	1,900	2,100	2,600
STREAM 5B25					
At confluence with White Rock Creek	0.78	1,350	1,750	1,950	2,400
STREAM 5B26					
At confluence with White Rock Creek	0.58	1,000	1,300	1,450	1,800
STREAM 5B27					
1,000 feet downstream of State Highway 289	1.01	1,900	2,550	2,850	3,600
Upstream of Stream 5B28	0.50	1,000	1,300	1,450	1,750
STREAM 5B28					
At confluence with Stream 5B27	0.21	450	600	700	850
STREAM 5B29					
At confluence with White Rock Creek	1.20	2,050	2,850	3,150	3,950
3,500 feet upstream of confluence with White Rock Creek	0.90	1,650	2,250	2,500	3,150

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
STREAM 5B30					
At confluence with White Rock Creek	1.35	2,150	2,950	3,300	4,150
5,800 feet upstream of confluence with White Rock Creek	0.89	1,450	1,900	2,100	2,600
STREAM 5B31					
At confluence with White Rock Creek	1.16	2,100	2,850	3,200	4,000
2,700 feet upstream of confluence with White Rock Creek	0.66	1,150	1,500	1,650	2,000
6,600 feet upstream of confluence with White Rock Creek	0.30	650	900	1,000	1,200
STREAM 5B32					
At confluence with White Rock Creek	0.38	700	900	1,000	1,200
STREAM 5B33					
At confluence with White Rock Creek	0.21	450	800	700	850
STREAM 5B34					
At confluence with White Rock Creek	0.48	950	1,300	1,450	1,850
STREAM 5B35					
At confluence with White Rock Creek	0.64	1,050	1,400	1,550	1,900
STREAM 5B36					
At confluence with White Rock Creek	2.14	3,150	4,300	4,850	6,100
At State Highway 121	1.33	2,450	3,350	3,750	4,700

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

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Cross section data for the backwater analyses of the streams studied by detailed methods were field surveyed and were located at close intervals above or below bridges and culverts in order to compute the significant backwater effects of these structures. For the area covered by approximate methods, the 100-year frequency flood plains were taken from USGS Flood Prone Area Maps (Reference 6).

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Channel roughness coefficients (Manning's "n") for the computations were assigned on the basis of field inspections of flood plain areas and on previous studies by the COE. The roughness coefficients ranged from 0.013 to 0.065 for the channel "n" values and 0.030 to 0.075 for the overbank "n" values.

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE HEC-2 step-backwater computer program (Reference 7). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals. Starting water-surface elevations were taken from water-surface elevations for Lake Ray Hubbard.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood

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risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps (Reference 8).

For streams studied by approximate methods, only the 100-year flood plain boundary is shown. Approximate areas were delineated using USGS Flood Prone Area Maps (Reference 6).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2). Cross sections for Stream 2G1 lie outside the community; therefore, no Floodway Data Table for this stream is shown in this study.

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown.

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Rowlett Creek								
A	102,700[1]	1,487	15,502	2.84	517.6	517.6	518.5	0.9
B	105,320[1]	1,527	17,837	2.57	521.8	521.8	522.7	0.9
C	108,150[1]	2,040	21,340	2.15	523.1	523.1	524.0	0.9
D	112,700[1]	1,543	12,961	2.48	524.8	524.8	525.8	1.0
E	118,200[1]	1,155	13,041	2.47	532.5	532.5	533.2	0.7
F	121,240[1]	1,413	10,471	3.25	534.7	534.7	535.5	0.8
G	124,900[1]	1,155	10,518	3.23	539.8	539.8	540.8	1.0
H	128,670[1]	1,328	10,248	3.35	544.8	544.8	545.8	1.0
I	132,020[1]	2886/2786[3]	24,589	1.37	549.8	549.8	550.8	1.0
J	134,340[1]	1753/1503[3]	11,741	2.87	550.7	550.7	551.7	1.0
K	138,220[1]	1385/1085[3]	8,757	4.09	555.7	555.7	556.7	1.0
L	139,700[1]	934	7,408	4.83	559.3	559.3	560.2	0.9
M	141,870[1]	1432/20[3]	11,076	3.23	562.9	562.9	563.8	0.9
N	144,740[1]	775/300[3]	6,253	5.73	567.7	567.7	568.6	0.9
O	149,500[1]	1,488[4]	13,794	2.60	576.7	576.7	577.6	0.9
P	154,060[1]	1,148[4]	10,440	2.69	584.0	584.0	584.5	0.5
Q	157,050[1]	1,117[4]	8,820	3.19	586.1	586.1	586.9	0.8
Cottonwood Creek								
A	4,940[2]	524/480[3]	3,822	4.68	525.7	525.7	526.6	0.9
B	7,500[2]	490/240[3]	3,900	4.59	531.8	531.8	532.8	1.0
C	10,030[2]	621/90[3]	4,448	3.96	536.6	536.6	537.5	0.9
D	13,150[2]	327	2,713	6.30	542.5	542.5	543.4	0.9

[1]Feet above confluence with Lake Ray Hubbard

[2]Feet above confluence with Rowlett Creek

[3]Width/width within corporate limits

[4]This width extends beyond extraterritorial jurisdiction boundary

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

ROWLETT CREEK-COTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Cottonwood Creek (continued)								
E	16,350[1]	408	3,217	5.31	550.1	550.1	551.1	1.0
F	21,700[1]	347/60[3]	2,976	5.75	562.9	562.9	563.9	1.0
G	24,530[1]	300/250[3]	2,382	7.18	568.1	568.1	568.9	0.8
H	29,020[1]	325	2,958	7.07	582.4	582.4	583.3	0.9
Stream 2D8								
A	1,700[1]	253	1,081	6.57	534.7	534.7	535.7	1.0
B	3,150[1]	84	697	8.89	544.2	544.2	545.2	1.0
C	3,710[1]	89	1,009	6.14	551.4	551.4	552.2	0.8
D	5,000[1]	74	607	10.21	556.5	556.5	557.4	0.9
E	6,240[1]	87	866	7.16	566.0	566.0	566.3	0.3
F	7,000[1]	84	828	6.77	568.6	568.6	569.4	0.8
G	7,620[1]	59	441	6.47	570.5	570.5	571.5	1.0
H	8,420[1]	52	359	7.94	582.2	582.2	583.2	1.0
I	9,255[1]	63	296	8.62	593.0	593.0	593.0	0.0
Stream 2D9								
A	170[2]	67	350	6.57	542.6	542.6	543.6	1.0
B	830[2]	70	583	3.94	551.9	551.9	552.9	1.0
C	1,840[2]	70	745	3.09	561.0	561.0	562.0	1.0
D	2,310[2]	45	334	6.89	561.4	561.4	562.4	1.0

[1]Feet above confluence with Rowlett Creek
[2]Feet above confluence with Stream 2D8
[3]Width/width within corporate limits

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

COTTONWOOD CREEK-STREAM 2D8-STREAM 2D9

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Stream 2D9 (continued)								
E	3,020[1]	35	208	8.40	571.3	571.3	571.3	0.0
F	3,670[1]	41	215	5.57	576.5	576.5	576.6	0.1
Stream 2D10								
A	310[1]	47	275	9.99	573.3	573.3	573.3	0.0
B	1,050[1]	115	294	6.98	587.4	587.4	587.4	0.0
C	1,650[1]	28	145	13.11	596.7	596.7	596.7	0.0
D	2,000[1]	85	618	3.08	608.1	608.1	609.1	1.0
Brown Branch								
A	2,140[2]	208	1,357	7.30	546.7	546.7	547.7	1.0
B	4,220[2]	212	1,658	5.97	556.7	556.7	557.7	1.0
C	5,118[2]	140	1,032	7.75	560.1	560.1	560.8	0.7
D	7,320[2]	80	1,169	6.67	569.6	569.6	569.8	0.2
E	8,240[2]	95	601	6.33	574.6	574.6	575.0	0.4
F	10,530[2]	97	556	6.83	587.1	587.1	587.1	0.0
G	14,540[2]	100	624	3.93	626.3	626.3	627.1	0.8
H	16,370[2]	151	391	4.86	635.1	635.1	635.8	0.7
I	18,150[2]	93	329	5.78	650.8	650.8	651.2	0.4
J	19,400[2]	150	278	4.82	657.8	657.8	658.2	0.4

[1]Feet above confluence with Stream 2D8
[2]Feet above confluence with Rowlett Creek

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 2D9-STREAM 2D10-BROWN BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Russell Creek								
A	2,100[1]	333	1,950	5.64	583.8	582.3[4]	583.3	1.0
B	4,000[1]	258/160[3]	2,005	5.49	591.0	591.0	592.0	1.0
C	6,700[1]	273	2,114	5.20	602.8	602.8	603.1	0.3
D	9,400[1]	105	1,187	9.35	612.4	612.4	613.4	1.0
E	12,010[1]	153	1,616	6.87	625.5	625.5	625.5	0.0
F	14,600[1]	115	1,217	9.12	636.9	636.9	636.9	0.0
G	18,320[1]	115	1,175	5.79	662.6	662.6	662.9	0.0
H	20,750[1]	74	624	10.91	673.9	673.9	673.9	0.0
I	22,220[1]	112	894	5.09	686.1	686.1	686.1	0.0
J	24,310[1]	120	726	6.27	694.9	694.9	694.9	0.0
Beck Branch								
A	15,390[1]	82	548	7.85	581.8	581.8	582.5	0.7
Spring Creek								
A	55,680[2]	298	2,917	7.44	588.5	588.5	589.4	0.9
B	56,600[2]	333	3,371	4.00	592.7	592.7	593.3	0.6
C	57,810[2]	267	2,826	4.78	595.3	595.3	596.1	0.8
D	59,600[2]	172	1,575	8.57	598.6	598.6	599.5	0.9
E	60,900[2]	460	2,204	6.12	606.6	606.6	607.6	1.0
F	61,950[2]	333	3,585	3.77	609.8	609.8	610.7	0.9
G	62,750[2]	167	1,802	7.49	610.5	610.5	611.3	0.8
H	64,710[2]	155	1,861	7.26	614.5	614.5	615.3	0.8

[1]Feet above confluence with Rowlett Creek

[2]Feet above confluence with Pittman Creek

[3]Width/width within corporate limits

[4]Elevation computed without consideration of backwater from Rowlett Creek

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

RUSSELL CREEK-BECK BRANCH-SPRING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Stream 2D11								
A	680[1]	104	442	6.11	561.2	561.2	561.2	0.0
B	2,280[1]	39	264	10.21	574.3	574.3	574.4	0.1
C	2,950[1]	37	222	12.19	583.5	583.5	583.5	0.0
D	3,990[1]	55	331	8.14	598.4	598.4	598.4	0.0
E	5,620[1]	55	368	4.35	609.8	609.8	610.3	0.5
F	6,080[1]	41	214	7.46	611.5	611.5	612.1	0.6
G	7,570[1]	75	354	4.83	625.9	625.9	626.3	0.4
Bowman Branch								
A	760[1]	76	437	9.38	576.0	576.0	576.0	0.0
B	3,670[1]	85/70[3]	527	7.78	592.8	592.8	592.8	0.0
C	5,220[1]	187	746	5.50	614.4	614.1	614.8	0.7
D	7,570[1]	107	363	8.81	635.0	635.0	635.3	0.3
E	8,580[1]	169	542	4.24	646.3	646.3	647.2	0.9
F	9,730[1]	356	1,421	1.62	656.1	656.1	657.0	0.9
Stream 2D12								
A	640[2]	47	213	5.18	561.6	560.7[4]	561.7	1.0
B	1,380[2]	61	218	5.05	566.0	566.0	566.7	0.7
Stream 2D15								
A	1,470[2]	91	291	3.61	574.8	574.8	575.8	1.0
B	3,090[2]	67	193	5.44	590.2	590.2	591.1	0.9

[1]Feet above confluence with Brown Branch

[2]Feet above confluence with Rowlett Creek

[3]Width/width within corporate limits

[4]Elevation computed without consideration of backwater from Rowlett Creek

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 2D11-BOWMAN BRANCH-STREAM 2D12-STREAM 2D15

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Spring Creek (continued)								
I	66,530[1]	132	1,415	8.06	619.7	619.7	620.0	0.3
J	68,720[1]	177	1,299	8.77	628.0	628.0	628.2	0.2
K	71,560[1]	180	1,309	8.48	639.5	639.5	639.6	0.1
L	74,575[1]	130	1,836	6.05	648.5	648.5	649.3	0.8
M	75,820[1]	161	1,430	7.76	653.7	653.7	654.4	0.7
N	77,000[1]	209	1,607	6.91	661.3	661.3	662.0	0.7
O	78,470[1]	166	1,670	6.11	666.0	666.0	667.0	1.0
P	83,470[1]	173	1,342	5.74	682.7	682.7	683.6	0.9
Q	84,470[1]	93	877	8.78	686.0	686.0	686.8	0.8
R	86,130[1]	78	834	4.32	691.8	691.8	692.8	1.0
S	89,150[1]	220	1,043	3.45	706.3	706.3	707.0	0.7
T	90,830[1]	309	933	2.25	715.7	715.7	716.4	0.7
U	93,420[1]	91	169	7.12	728.1	728.1	728.3	0.2
V	95,250[1]	161	581	2.07	739.8	739.8	740.8	1.0
Stream 2I9								
A	1,290[2]	46	261	9.2	640.0	640.0	641.0	1.0
B	2,080[2]	70	402	6.0	648.5	648.5	648.9	0.4
C	3,275[2]	64	267	5.6	655.5	655.5	655.6	0.1
D	4,280[2]	49	224	6.7	662.5	662.5	662.5	0.0

[1]Feet above confluence with Pittman Creek
[2]Feet above confluence with Spring Creek

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

FLOODWAY DATA

SPRING CREEK-STREAM 219

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION.			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Stream 2I12								
A	1,820	67	332	4.07	692.4	692.4	693.3	0.9
B	3,083	86	335	2.23	696.3	696.3	696.4	0.1
C	3,513	34	83	9.00	697.6	697.6	697.6	0.0
Stream 2I11								
A	1,290	44	244	8.18	687.3	687.3	688.3	1.0
B	3,200	98	218	8.70	700.0	700.0	700.0	0.0
Pittman Creek								
A	980	104	1,239	7.10	592.4	592.4	593.3	0.9
B	2,810	120	1,401	6.28	600.4	600.4	601.1	0.7
C	4,370	105	1,182	7.44	605.9	605.9	606.8	0.9
D	5,870	113	1,330	6.32	615.3	615.3	616.0	0.7
E	7,000	93	777	10.81	618.4	618.4	618.9	0.5
F	8,000	97	849	9.89	625.4	625.4	625.4	0.0
G	8,730	112	1,333	5.70	630.5	630.5	630.9	0.4
H	10,000	120	800	9.50	634.3	634.3	634.3	0.0
I	11,090	240	1,390	5.47	645.1	645.1	645.1	1.0
J	11,580	93	992	6.35	647.4	647.4	647.8	0.4
K	12,200	100	924	6.82	649.6	649.6	650.1	0.5
L	12,340	165	1,231	5.12	650.8	650.8	651.8	1.0
M	13,320	87	508	9.84	654.2	654.2	654.2	0.0
N	14,530	89	685	7.30	661.3	661.3	661.6	0.3

[1]Feet above confluence with Spring Creek

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 2I12-STREAM 2I11-PITTMAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Spring Creek (continued)								
I	66,530[1]	132	1,415	8.06	619.7	619.7	620.0	0.3
J	68,720[1]	177	1,299	8.77	628.0	628.0	628.2	0.2
K	71,560[1]	180	1,309	8.48	639.5	639.5	639.6	0.1
L	74,575[1]	130	1,836	6.05	648.5	648.5	649.3	0.8
M	75,820[1]	161	1,430	7.76	653.7	653.7	654.4	0.7
N	77,000[1]	209	1,607	6.91	661.3	661.3	662.0	0.7
O	78,470[1]	166	1,670	6.11	666.0	666.0	667.0	1.0
P	83,470[1]	173	1,342	5.74	682.7	682.7	683.6	0.9
Q	84,470[1]	93	877	8.78	686.0	686.0	686.8	0.8
R	86,130[1]	78	834	4.32	691.8	691.8	692.8	1.0
S	89,150[1]	220	1,043	3.45	706.3	706.3	707.0	0.7
T	90,830[1]	309	933	2.25	715.7	715.7	716.4	0.7
U	93,420[1]	91	169	7.12	728.1	728.1	728.3	0.2
V	95,250[1]	161	581	2.07	739.8	739.8	740.8	1.0
Stream 219								
A	1,290[2]	46	261	9.2	640.0	640.0	641.0	1.0
B	2,080[2]	70	402	6.0	648.5	648.5	648.9	0.4
C	3,275[2]	64	267	5.6	655.5	655.5	655.6	0.1
D	4,280[2]	49	224	6.7	662.5	662.5	662.5	0.0

[1]Feet above confluence with Pittman Creek
[2]Feet above confluence with Spring Creek

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

FLOODWAY DATA

SPRING CREEK-STREAM 219

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
Stream 2I12								
A	1,820	67	332	4.07	692.4	692.4	693.3	0.9
B	3,083	86	335	2.23	696.3	696.3	696.4	0.1
C	3,513	34	83	9.00	697.6	697.6	697.6	0.0
Stream 2I11								
A	1,290	44	244	8.18	687.3	687.3	688.3	1.0
B	3,200	98	218	8.70	700.0	700.0	700.0	0.0
Pittman Creek								
A	980	104	1,239	7.10	592.4	592.4	593.3	0.9
B	2,810	120	1,401	6.28	600.4	600.4	601.1	0.7
C	4,370	105	1,182	7.44	605.9	605.9	606.8	0.9
D	5,870	113	1,330	6.32	615.3	615.3	616.0	0.7
E	7,000	93	777	10.81	618.4	618.4	618.9	0.5
F	8,000	97	849	9.89	625.4	625.4	625.4	0.0
G	8,730	112	1,333	5.70	630.5	630.5	630.9	0.4
H	10,000	120	800	9.50	634.3	634.3	634.3	0.0
I	11,090	240	1,390	5.47	645.1	645.1	645.1	1.0
J	11,580	93	992	6.35	647.4	647.4	647.8	0.4
K	12,200	100	924	6.82	649.6	649.6	650.1	0.5
L	12,340	165	1,231	5.12	650.8	650.8	651.8	1.0
M	13,320	87	508	9.84	654.2	654.2	654.2	0.0
N	14,530	89	685	7.30	661.3	661.3	661.6	0.3

[1]Feet above confluence with Spring Creek

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 2I12-STREAM 2I11-PITTMAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Spring Creek (continued)								
I	66,530[1]	132	1,415	8.06	619.7	619.7	620.0	0.3
J	68,720[1]	177	1,299	8.77	628.0	628.0	628.2	0.2
K	71,560[1]	180	1,309	8.48	639.5	639.5	639.6	0.1
L	74,575[1]	130	1,836	6.05	648.5	648.5	649.3	0.8
M	75,820[1]	161	1,430	7.76	653.7	653.7	654.4	0.7
N	77,000[1]	209	1,607	6.91	661.3	661.3	662.0	0.7
O	78,470[1]	166	1,670	6.11	666.0	666.0	667.0	1.0
P	83,470[1]	173	1,342	5.74	682.7	682.7	683.6	0.9
Q	84,470[1]	93	877	8.78	686.0	686.0	686.8	0.8
R	86,130[1]	78	834	4.32	691.8	691.8	692.8	1.0
S	89,150[1]	220	1,043	3.45	706.3	706.3	707.0	0.7
T	90,830[1]	309	933	2.25	715.7	715.7	716.4	0.7
U	93,420[1]	91	169	7.12	728.1	728.1	728.3	0.2
V	95,250[1]	161	581	2.07	739.8	739.8	740.8	1.0
Stream 2I9								
A	1,290[2]	46	261	9.2	640.0	640.0	641.0	1.0
B	2,080[2]	70	402	6.0	648.5	648.5	648.9	0.4
C	3,275[2]	64	267	5.6	655.5	655.5	655.6	0.1
D	4,280[2]	49	224	6.7	662.5	662.5	662.5	0.0

[1]Feet above confluence with Pittman Creek
[2]Feet above confluence with Spring Creek

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

FLOODWAY DATA

SPRING CREEK-STREAM 219

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Stream 2I12								
A	1,820	67	332	4.07	692.4	692.4	693.3	0.9
B	3,083	86	335	2.23	696.3	696.3	696.4	0.1
C	3,513	34	83	9.00	697.6	697.6	697.6	0.0
Stream 2I11								
A	1,290	44	244	8.18	687.3	687.3	688.3	1.0
B	3,200	98	218	8.70	700.0	700.0	700.0	0.0
Pittman Creek								
A	980	104	1,239	7.10	592.4	592.4	593.3	0.9
B	2,810	120	1,401	6.28	600.4	600.4	601.1	0.7
C	4,370	105	1,182	7.44	605.9	605.9	606.8	0.9
D	5,870	113	1,330	6.32	615.3	615.3	616.0	0.7
E	7,000	93	777	10.81	618.4	618.4	618.9	0.5
F	8,000	97	849	9.89	625.4	625.4	625.4	0.0
G	8,730	112	1,333	5.70	630.5	630.5	630.9	0.4
H	10,000	120	800	9.50	634.3	634.3	634.3	0.0
I	11,090	240	1,390	5.47	645.1	645.1	645.1	1.0
J	11,580	93	992	6.35	647.4	647.4	647.8	0.4
K	12,200	100	924	6.82	649.6	649.6	650.1	0.5
L	12,340	165	1,231	5.12	650.8	650.8	651.8	1.0
M	13,320	87	508	9.84	654.2	654.2	654.2	0.0
N	14,530	89	685	7.30	661.3	661.3	661.6	0.3

[1]Feet above confluence with Spring Creek

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 2I12-STREAM 2I11-PITTMAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Pittman Creek (continued)								
O	17,112[1]	377	958	5.2	672.5	672.5	673.0	0.5
P	17,500[1]	267	1,054	4.7	675.0	675.0	675.0	0.0
Q	18,421[1]	48	315	9.6	679.5	679.5	679.5	0.0
R	19,566[1]	48	300	9.3	688.7	688.7	688.7	0.0
S	20,666[1]	450	992	2.6	701.2	701.2	701.2	0.0
T	21,496[1]	43	200	11.8	705.5	705.5	705.5	0.0
U	23,486[1]	76	331	5.3	722.9	722.9	722.9	0.0
V	24,556[1]	52	210	8.3	729.9	729.9	729.9	0.0
W	25,716[1]	38	147	6.5	734.7	734.7	735.2	0.5
X	26,241[1]	36	161	5.9	738.7	738.7	739.1	0.4
Stream 2H3								
A	470[2]	53	237	7.59	602.2	601.4[3]	602.4	1.0
B	575[2]	300	722	2.49	612.2	612.3	612.3	0.0
C	1,675[2]	81	256	2.29	612.9	612.9	613.2	0.3
D	1,823[2]	150	1,304	1.27	621.6	621.6	621.6	0.0
E	2,295[2]	40	148	11.14	625.1	625.1	625.1	0.0
North Fork Pittman Creek								
A	649[2]	35	228	11.0	679.7	679.7	679.7	0.0
B	1,660[2]	40	194	9.3	685.1	685.1	685.2	0.1

[1]Feet above confluence with Spring Creek
[2]Feet above confluence with Pittman Creek
[3]Elevation computed without consideration of backwater from Pittman Creek

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

PITTMAN CREEK-STREAM 2H3-NORTH FORK PITTMAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
North Fork Pittman Creek (continued)								
C	2,590[1]	36	190	9.5	689.4	689.4	689.4	0.0
D	3,720[1]	54	204	4.7	694.5	694.5	694.5	0.0
E	4,450[1]	43	141	6.7	699.4	699.4	699.4	0.0
Prairie Creek								
A	26,000[2]	126	1,192	5.3	685.0	685.0	685.8	0.8
B	28,930[2]	*	608	9.0	694.5	694.5	694.5	0.0
C	29,366[2]	163	1,126	4.9	696.0	696.0	696.0	0.0
D	29,741[2]	122	779	7.1	696.3	696.3	696.3	0.0
E	30,422[2]	122	899	6.1	699.8	699.8	700.0	0.2
F	30,851[2]	*	609	9.0	700.0	700.0	700.3	0.3
G	31,620[2]	*	498	10.2	703.0	703.0	703.0	0.0
H	32,240[2]	*	581	8.8	705.8	705.8	705.8	0.0
I	32,750[2]	88	837	6.1	709.3	709.3	709.4	0.1
J	33,350[2]	123	876	3.7	710.4	710.4	710.5	0.1
K	33,900[2]	103	963	3.3	714.9	714.9	714.9	0.0
L	34,400[2]	105	749	4.3	715.3	715.3	715.3	0.0
M	34,750[2]	91	568	5.6	715.4	715.4	715.4	0.0
N	35,100[2]	81	464	6.5	716.2	716.2	716.2	0.0
O	35,600[2]	95	639	4.7	718.9	718.9	718.9	0.0
P	35,930[2]	*	428	7.0	719.1	719.1	719.1	0.0
Q	36,300[2]	*	231	13.0	722.5	722.5	722.5	0.0

[1]Feet above confluence with Pittman Creek
[2]Feet above confluence with Spring Creek
*Floodway coincident with channel banks

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

NORTH FORK PITTMAN CREEK-PRAIRIE CREEK

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Stream 2L1								
A	130[1]	44	269	9.44	669.8	663.8[4]	664.8	1.0
B	187[1]	26	173	14.74	675.6	675.6	676.1	0.5
C	2,130[1]	73	245	5.50	684.6	684.6	684.7	0.1
D	2,220[1]	61	149	9.04	687.0	687.0	687.0	0.0
E	4,940[1]	83	228	5.90	703.6	703.6	703.6	0.0
Stream 5B13								
A	9,911[2]	250	476	3.1	686.8	686.8	686.8	0.0
B	10,173[2]	*	469	3.2	690.1	690.1	691.0	0.9
C	10,648[2]	*	338	4.4	690.3	690.3	691.2	0.9
D	10,955[2]	183	340	3.5	691.5	691.5	691.9	0.4
E	11,403[2]	*	153	5.4	693.8	693.8	693.8	0.0
F	11,903[2]	*	138	6.0	696.1	696.1	696.1	0.0
Tributary to Stream 5B13								
A	325[3]	*	141	1.8	693.8	693.8	693.8	0.0
Stream 5B14								
A	4,645[3]	286	471	1.3	678.4	678.4	679.4	1.0

[1]Feet above confluence with Prairie Creek
[2]Feet above confluence with McKamy Branch
[3]Feet above confluence with Stream 5B13
*Floodway coincident with channel banks
[4]Elevation computed without consideration of backwater from Prairie Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 2L1-STREAM 5B13-TRIBUTARY TO STREAM 5B13-STREAM 5B14

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
McKamy Branch								
A	24,550[1]	110	241	7.6	690.0	690.0	690.8	0.8
B	25,920[1]	96	362	4.6	701.8	701.8	702.7	0.9
White Rock Creek								
A	160,080[2]	766	8,188	3.0	614.5	614.5	614.6	0.1
B	162,240[2]	489	3,718	6.5	616.0	616.0	616.4	0.4
C	164,790[2]	444	5,517	4.3	623.2	623.2	624.2	1.0
D	172,020[2]	434	3,475	5.5	636.8	636.8	637.7	0.9
E	173,390[2]	377	3,345	5.4	640.3	640.3	641.3	1.0
F	175,780[2]	401	3,286	5.9	646.3	646.3	647.3	1.0
G	177,810[2]	565	4,673	3.8	650.9	650.9	651.8	0.9
H	182,980[2]	253	2,305	7.1	661.2	661.2	662.1	0.9
I	185,585[2]	275	2,283	6.9	668.0	668.0	668.7	0.7
J	189,270[2]	238	1,788	5.9	681.7	681.7	682.6	0.9
K	192,930[2]	242	1,874	5.4	693.1	693.1	693.9	0.8
L	196,460[2]	208	1,404	6.6	703.9	703.9	704.7	0.8
Stream 5B18								
A	540[1]	23	115	12.1	615.7	615.7	615.7	0.0
B	1,650[1]	210	468	2.8	625.4	625.4	626.4	1.0
C	3,730[1]	30	107	10.8	643.5	643.5	643.5	0.0

[1]Feet above confluence with White Rock Creek
[2]Feet above confluence with White Rock Lake

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

McKAMY BRANCH-WHITE ROCK CREEK-STREAM 5B18

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Stream 5B19								
A	2,000[1]	25	98	11.3	611.7	611.7	611.7	0.0
B	3,800[1]	75	257	4.0	633.6	633.6	633.9	0.3
C	5,040[1]	87	150	5.4	650.8	650.8	650.8	0.0
Stream 5B20								
A	1,500[1]	37	137	10.9	613.0	608.9[3]	608.9	0.0
B	4,310[1]	145	933	1.4	643.5	643.5	643.9	0.4
C	5,760[1]	100	394	3.1	655.6	655.6	655.6	0.0
D	7,080[1]	27	99	10.9	666.6	666.6	666.6	0.0
Stream 5B21								
A	1,490[1]	29	153	13.1	617.0	617.0	617.0	0.0
B	2,720[1]	37	290	6.5	625.1	625.1	625.9	0.8
C	3,410[1]	53	303	5.2	629.4	629.4	629.8	0.4
D	6,200[1]	101	103	5.9	663.6	663.6	663.8	0.2
Stream 5B22								
A	375[2]	190	442	2.5	640.6	640.6	641.4	0.8
B	2,500[2]	97	309	2.9	661.3	661.3	662.1	0.8
C	3,020[2]	151	622	1.2	665.5	665.5	666.2	0.7

[1]Feet above confluence with White Rock Creek
[2]Feet above confluence with Stream 5B21
[3]Elevation computed without consideration of backwater from White Rock Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 5B19-STREAM 5B20-STREAM 5B21-STREAM 5B22

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Stream 5B23								
A	2,060	44	111	9.1	636.5	636.5	636.5	0.0
B	4,100	97	213	4.0	657.7	657.7	658.7	1.0
C	5,640	58	107	6.7	676.5	676.5	676.7	0.2
Stream 5B24								
A	2,480	150	260	7.6	646.0	646.0	646.0	0.0
B	4,400	88	187	8.4	660.6	660.6	660.6	0.0
C	6,500	113	189	7.4	684.1	684.1	685.0	0.9
D	8,440	101	310	3.8	710.4	710.4	711.4	1.0
Stream 5B25								
A	1,740	77	403	4.4	640.7	640.7	641.0	0.3
B	4,240	43	153	10.5	666.3	666.3	666.6	0.3
C	4,600	89	373	3.6	670.3	670.3	671.1	0.8
D	6,410	100	145	6.9	683.5	683.5	683.5	0.0
Stream 5B26								
A	1,730	24	113	12.4	637.6	637.6	637.6	0.0
B	3,080	71	255	4.7	653.2	653.2	654.1	0.9
C	4,160	37	103	9.3	663.0	663.0	663.0	0.0

[1]Feet above confluence with White Rock Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 5B23-STREAM 5B24-STREAM 5B25-STREAM 5B26

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Stream 5B27								
A	2,480[1]	136	740	5.0	645.5	645.5	646.3	0.8
B	3,740[1]	99	442	8.3	649.9	649.9	650.7	0.8
C	5,280[1]	112	427	8.4	661.9	661.9	662.1	0.2
D	8,100[1]	143	267	7.6	682.6	682.6	683.0	0.4
E	9,380[1]	104	469	3.1	692.9	692.9	693.9	1.0
F	12,600[1]	176	306	2.9	713.1	713.1	713.4	0.3
Stream 5B28								
A	210[2]	64	141	5.0	693.5	693.5	694.5	1.0
B	1,670[2]	79	97	6.4	705.6	705.6	706.2	0.6
Stream 5B29								
A	1,230[2]	58	336	9.4	636.1	635.1[3]	636.1	1.0
B	2,350[2]	238	1,567	1.9	647.9	647.9	648.8	0.9
C	5,367[2]	357	446	4.4	668.0	668.0	668.6	0.6
D	7,470[2]	61	267	5.1	676.4	676.4	677.3	0.9
E	9,380[2]	115	263	3.4	686.7	686.7	687.0	0.3

[1]Feet above confluence with White Rock Creek
[2]Feet above confluence with Stream 5B27
[3]Elevation computed without consideration of backwater from White Rock Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 5B27-STREAM 5B28-STREAM 5B29

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Stream 5B30								
A	1,510	84	329	9.7	650.0	649.8[2]	649.9	0.1
B	3,960	97	911	3.3	669.1	669.1	669.3	0.2
C	6,450	45	183	11.5	681.0	681.0	681.0	0.0
D	9,520	73	221	8.8	703.5	703.5	704.1	0.6
Stream 5B31								
A	1,060	48	438	7.3	658.8	658.2[2]	659.1	0.9
B	3,220	52	184	9.0	675.4	675.4	676.0	0.6
C	4,490	59	175	9.0	687.2	687.2	687.9	0.7
D	6,380	97	309	3.2	704.1	704.1	705.1	1.0
E	8,200	108	221	4.5	716.7	716.7	717.1	0.4
Stream 5B32								
A	2,000	69	166	5.2	675.6	675.6	676.0	0.4
B	3,730	80	145	3.1	693.5	693.5	694.5	1.0
Stream 5B33								
A	250	57	130	5.4	665.9	665.9	666.9	1.0
B	1,680	21	64	10.0	677.6	677.6	677.6	0.0
C	2,720	112	155	2.3	696.0	696.0	696.3	0.3

[1]Feet above confluence with White Rock Creek

[2]Elevation computed without consideration of backwater from White Rock Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 5B30-STREAM 5B31-STREAM 5B32-STREAM 5B33

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Stream 5B34								
A	530	39	286	4.7	664.3	662.6[3]	663.6	1.0
B	1,870	25	139	9.2	674.1	674.1	675.1	1.0
C	4,550	41	68	7.3	699.3	699.3	700.2	0.9
Stream 5B35								
A	370	57	453	3.4	673.5	672.1[3]	673.1	1.0
B	2,000	101	212	6.9	689.3	689.3	689.3	0.0
C	4,880	80	162	5.9	707.1	707.1	708.1	1.0
D	5,810	95/20[2]	190	3.7	717.3	717.3	718.2	0.9
Stream 5B36								
A	580	187	1,613	3.0	675.0	674.0[3]	675.0	1.0
B	1,680	141	547	8.9	678.0	678.0	678.0	0.0
C	3,410	198	1,094	4.0	689.7	689.7	690.5	0.8
D	4,880	169/40[2]	880	4.4	694.1	694.1	695.1	1.0
E	5,670	137	936	4.1	701.6	701.6	701.8	0.2

[1]Feet above confluence with White Rock Creek
[2]Width/width within corporate limits
[3]Elevation computed without consideration of backwater from White Rock Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOODWAY DATA

STREAM 5B34-STREAM 5B35-STREAM 5B36

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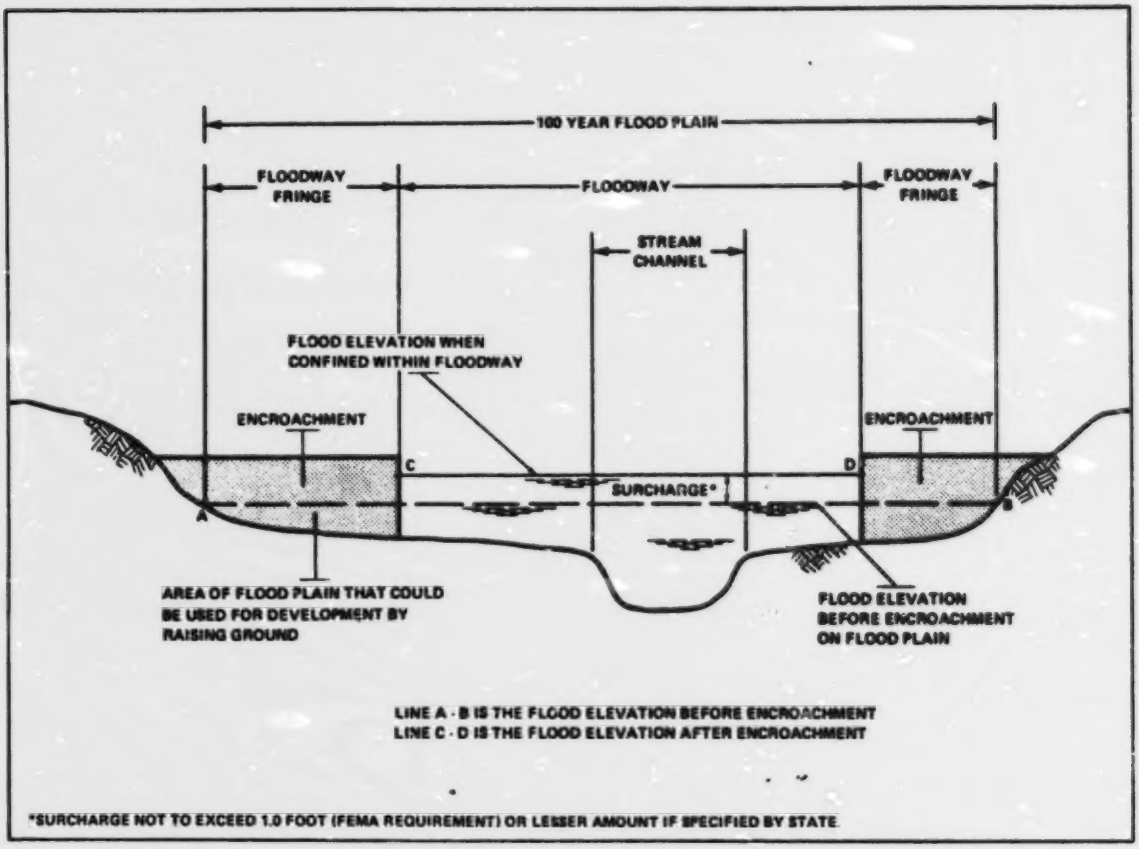
The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 4.



FLOODWAY SCHEMATIC Figure 4

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 2 for certain downstream cross sections of Stream 2D12, Russell Creek, Stream 2H3, Stream 2L1, Stream 5B20, Stream 5B29, Stream 5B30, Stream 5B31, Stream 5B34, Stream 5B35, and Stream 5B36 are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

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5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail in the City of Plano.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following tabulation for more than 20 percent of the reach:

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of the City of Plano are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHP	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Rowlett Creek							
Reach 1	30	-4.4	-1.2	+1.4	045	A9	Varies
Reach 2	15,30	-2.4	-0.5	+1.0	025	A5	Varies
Reach 3	15	-4.3	-1.2	+2.1	045	A9	Varies
Reach 4	15	-2.2	-0.6	+1.4	020	A4	Varies
Cottonwood Creek							
Reach 1	30	-1.7	-0.5	+1.0	015	A3	Varies
Reach 2	15,30	-2.6	-0.6	+1.1	025	A5	Varies
Reach 3	15	-3.0	-0.6	+1.1	030	A6	Varies
Stream 2D8							
Reach 1	30	-1.6	-0.4	+1.0	015	A3	Varies
Reach 2	30	-2.3	-0.3	+0.6	025	A5	Varies
Stream 2D9							
Reach 1	30	-1.1	-0.2	+0.5	010	A2	Varies
Reach 2	30	-3.6	-0.3	+0.6	035	A7	Varies
Reach 3	30	-1.4	-0.3	+0.7	015	A3	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

ROWLETT CREEK—COTTONWOOD CREEK—STREAM 2D8—STREAM 2D9

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Stream 2D10							
Reach 1	30	-1.3	-0.3	+0.6	015	A3	Varies
Stream 2G1 Flooding controlled by Cottonwood Creek	15	-2.8	-0.7	+1.5	030	A6	Varies
Reach 1	15	-2.8	-0.7	+1.5	030	A6	Varies
Brown Branch							
Reach 1	30	-1.9	-0.5	+1.0	020	A4	Varies
Reach 2	15,30	-0.6	-0.2	+0.4	005	A1	Varies
Stream 2D11							
Reach 1	30	-1.3	-0.4	+0.8	015	A3	Varies
Bowman Branch							
Reach 1	30	-1.8	-0.4	+1.0	020	A4	Varies
Reach 2	30	-0.5	-0.1	+0.3	005	A1	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

STREAM 2D10—STREAM 2G1—BROWN BRANCH—
STREAM 2D11—BOWMAN BRANCH

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Stream 2D12							
Reach 1	15,30	-0.6	-0.2	+0.3	005	A1	Varies
Stream 2D15							
Reach 1	15	-0.5	-0.1	+0.3	.005	A1	Varies
Russell Creek							
Reach 1	10,15	-2.5	-0.6	+1.4	025	A5	Varies
Beck Branch							
Reach 1	30	-2.5	-0.7	+1.4	025	A5	Varies
Spring Creek							
Reach 1	10,15,30	-2.6	-0.7	+1.5	025	A5	Varies
Reach 2	10	-0.6	-0.2	+0.3	005	A1	Varies
Stream 2I9							
Reach 1	30	-1.1	-0.3	+0.7	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

STREAM 2D12-STREAM 2D15-RUSSELL CREEK-BECK BRANCH-SPRING CREEK-STREAM 2I9

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FNF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Stream 2I12							
Reach 1	10	-1.0	-0.3	+0.6	010	A2	Varies
Reach 2	10	-1.3	-0.3	+0.4	015	A3	Varies
Stream 2I11							
Reach 1	10	-1.0	-0.2	+0.6	010	A2	Varies
Pittman Creek							
Reach 1	25,30	-2.1	-0.6	+1.7	020	A4	Varies
Reach 2	25	-1.3	-0.4	+0.8	015	A3	Varies
Stream 2H3							
Reach 1	30	-0.5	-0.2	+0.3	005	A1	Varies
North Fork Pittman Creek							
Reach 1	25	-1.3	-0.4	+0.8	015	A3	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

STREAM 2I12—STREAM 2I11—PITTMAN CREEK—STREAM 2H3—NORTH FORK PITTMAN CREEK

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Prairie Creek							
Reach 1	25	-2.5	-0.7	+1.5	025	A5	Varies
Reach 2	25	-2.2	-0.6	+1.3	020	A4	Varies
Stream 2L1							
Reach 1	25	-0.8	-0.2	+0.5	010	A2	Varies
Stream 5B13							
Reach 1	25	-0.6	-0.2	+0.4	005	A1	Varies
Tributary to Stream 5B13							
Reach 1	25	-0.6	-0.2	+0.4	005	A1	Varies
Stream 5B14							
Reach 1	25	-0.1	0.0	+0.1	005	A1	Varies
McKamy Branch							
Reach 1	25	-0.4	-0.1	+0.2	005	A1	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

PRAIRIE CREEK—STREAM 2LI—STREAM 5B13—
TRIBUTARY TO STREAM 5B13—STREAM 5B14-McKAMY BRANCH

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
White Rock Creek							
Reach 1	10,25	-2.1	-0.6	+1.3	020	A4	Varies
Stream 5B18							
Reach 1	25	-0.9	-0.3	+0.6	010	A2	Varies
Stream 5B19							
Reach 1	25	-0.6	-0.2	+0.3	005	A1	Varies
Stream 5B20							
Reach 1	25	-1.0	-0.2	+0.9	010	A2	Varies
Stream 5B21							
Reach 1	25	-1.1	-0.3	+0.6	010	A2	Varies
Reach 2	25	-0.3	-0.1	+0.2	005	A1	Varies
Stream 5B22							
Reach 1	25	-0.4	-0.1	+0.2	005	A1	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

WHITE ROCK CREEK-STREAM 5B18-STREAM 5B19
STREAM 5B20-STREAM 5B21-STREAM 5B22

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Stream 5B23							
Reach 1	25	-1.0	-0.2	+0.4	010	A2	Varies
Reach 2	25	-0.3	-0.1	+0.1	005	A1	Varies
Stream 5B24							
Reach 1	25	-0.7	-0.1	+0.6	005	A1	Varies
Stream 5B25							
Reach 1	25	-0.7	-0.2	+0.5	005	A1	Varies
Reach 2	25	-2.2	-0.6	+0.8	020	A4	Varies
Reach 3	25	-1.0	-0.3	+0.4	010	A2	Varies
Stream 5B26							
Reach 1	25	-1.2	-0.4	+0.8	010	A2	Varies
Reach 2	25	-0.5	-0.1	+0.4	005	A1	Varies
Stream 5B27							
Reach 1	25	-0.9	-0.2	+0.7	010	A2	Varies
Reach 2	25	-2.2	-0.3	+0.5	020	A4	Varies
Reach 3	25	-0.3	-0.1	+0.2	005	A1	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

STREAM 5B23-STREAM 5B24-STREAM 5B25-
STREAM 5B26-STREAM 5B27

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Stream 5B28							
Reach 1	25	-0.3	-0.1	+0.1	005	A1	Varies
Stream 5B29							
Reach 1	10,25	-0.6	-0.1	+0.4	.005	A1	Varies
Stream 5B30							
Reach 1	10	-1.7	-0.3	+0.3	015	A3	Varies
Reach 2	10	-3.1	-0.4	+0.6	030	A6	Varies
Reach 3	10	-1.2	-0.4	+0.6	010	A2	Varies
Reach 4	10	-0.5	-0.1	+0.3	005	A1	Varies
Stream 5B31							
Reach 1	10	-4.3	-1.2	+0.9	045	A9	Varies
Reach 2	10	-0.7	-0.2	+0.4	005	A1	Varies
Stream 5B32							
Reach 1	10	-0.4	-0.1	+0.3	005	A1	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

STREAM 5B28-STREAM 5B29-STREAM 5B30-STREAM 5B31-STREAM 5B32

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Stream 5B33							
Reach 1	10	-0.8	-0.3	+0.5	010	A2	Varies
Stream 5B34							
Reach 1	10	-0.6	-0.2	+0.3	.005	A1	Varies
Stream 5B35							
Reach 1	10	-1.6	-0.3	+0.6	015	A3	Varies
Reach 2	10	-0.2	0.0	+0.1	005	A1	Varies
Stream 5B36							
Reach 1	10	-1.0	-0.3	+0.6	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

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TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

FLOOD INSURANCE ZONE DATA

STREAM 5B33-STREAM 5B34-STREAM 5B35-STREAM 5B36

associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zones A1, A2, A3, A4, A5, A6, A7, and A9:	Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the community are shown in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the City of Plano is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

The COE has published the following reports which contain flood data related to Plano: Flood Plain Information, Rowlett Creek, Part 1, Dallas and Collin Counties, Texas (Reference 1); Flood Plain Information, Rowlett Creek, Part II, Collin County, Texas (Reference 2); and Flood Plain Information, Upper White Rock Creek, Plano, Texas (Reference 3). The profiles used in these

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reports differ from those in this study by as much as 2 feet in some reaches. This is caused primarily by the differences in watershed and stream conditions, the fact that more detailed field data were collected, and that more sophisticated computations were made to develop the profiles used in this report. Since each of these studies were made by the COE, reconciliation of these differences was made within the agency.

The COE is currently preparing an Expanded Flood Plain Information Study for the Rowlett Creek basin with emphasis on the action/reaction implications of potential basin wide development. Reports prepared pursuant to this study will provide federal, state, local officials and planners, and other interested individuals with information which will complement the decision making framework, as related to an appropriate and efficient utilization of flood plains. Information contained in the final reports will be of three broad types: hydrographic, economic, and environmental. These information types will relate primarily to the flood plain and, to the extent necessary, the total Rowlett Creek basin. Reports prepared during this study will describe the effects on the flood plain of changes both on and off the flood plain. These reports will focus on existing developed and developing areas and will recognize, as fully as possible, those areas with a potential for development in the near future. Input from local communities, counties, and the region planning agency will provide future development alternatives to be examined. The hydrologic data used for the Expanded Flood Plain Information Study for existing conditions is conistent with the data presented in this study.

Flood Insurance Studies have been prepared for the adjoining or nearby communities for the Cities of Allen, Parker, Murphy, Garland, Richardson, and Dallas, and for Collin County (References 9, 10, 11, 12, 13, 14, and 15). The hydrologic data developed for these studies agree with the data developed for this study.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, Regional Director, Region VI Office, Federal Center, Denton, Texas 76201.

8.0 BIBLIOGRAPHY AND REFERENCES

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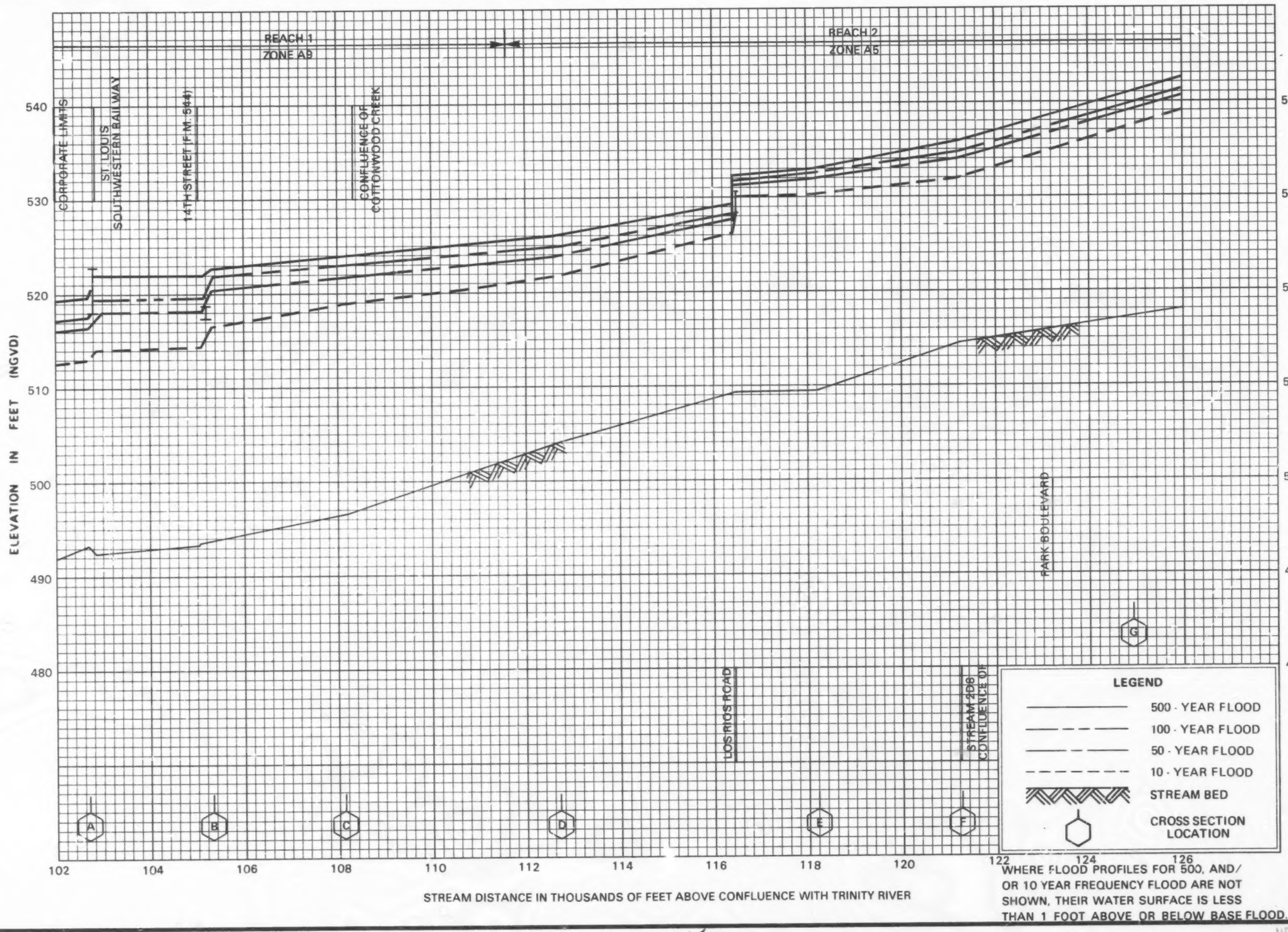

WHERE FLOOD PROFILES FOR 500, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

ROWLETT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

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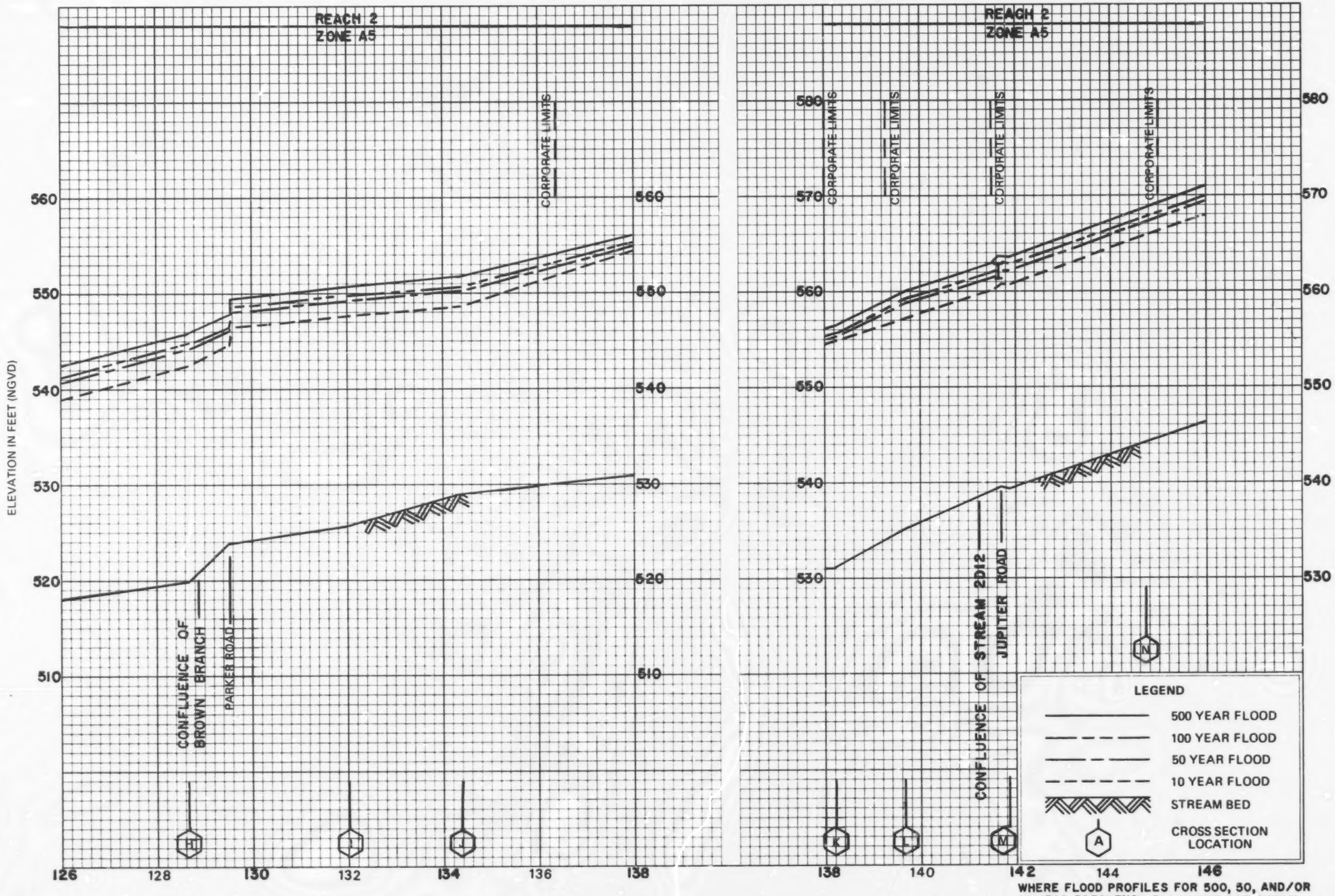

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

ROWLETT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

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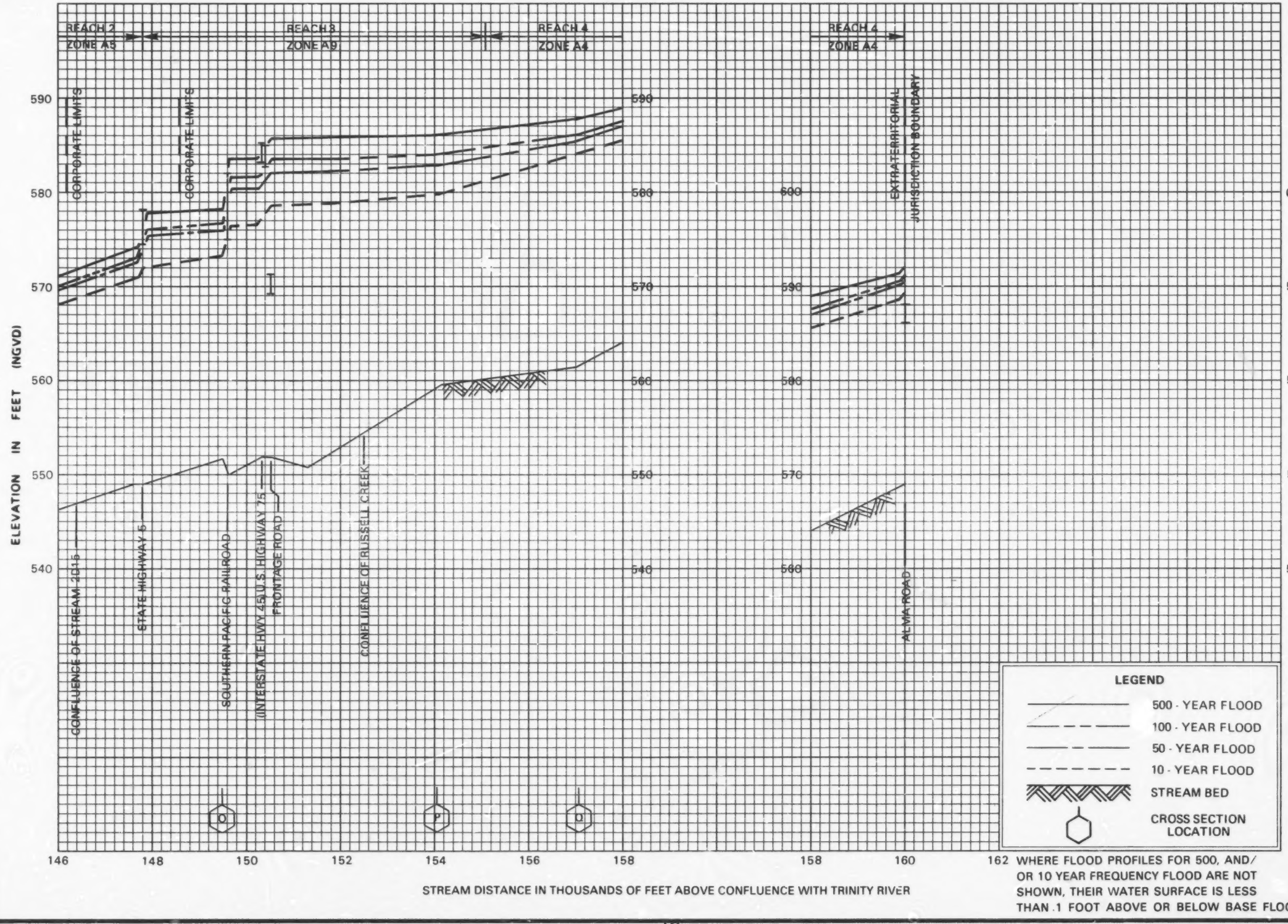

WHERE FLOOD PROFILES FOR 500, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN .1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

ROWLETT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

03P

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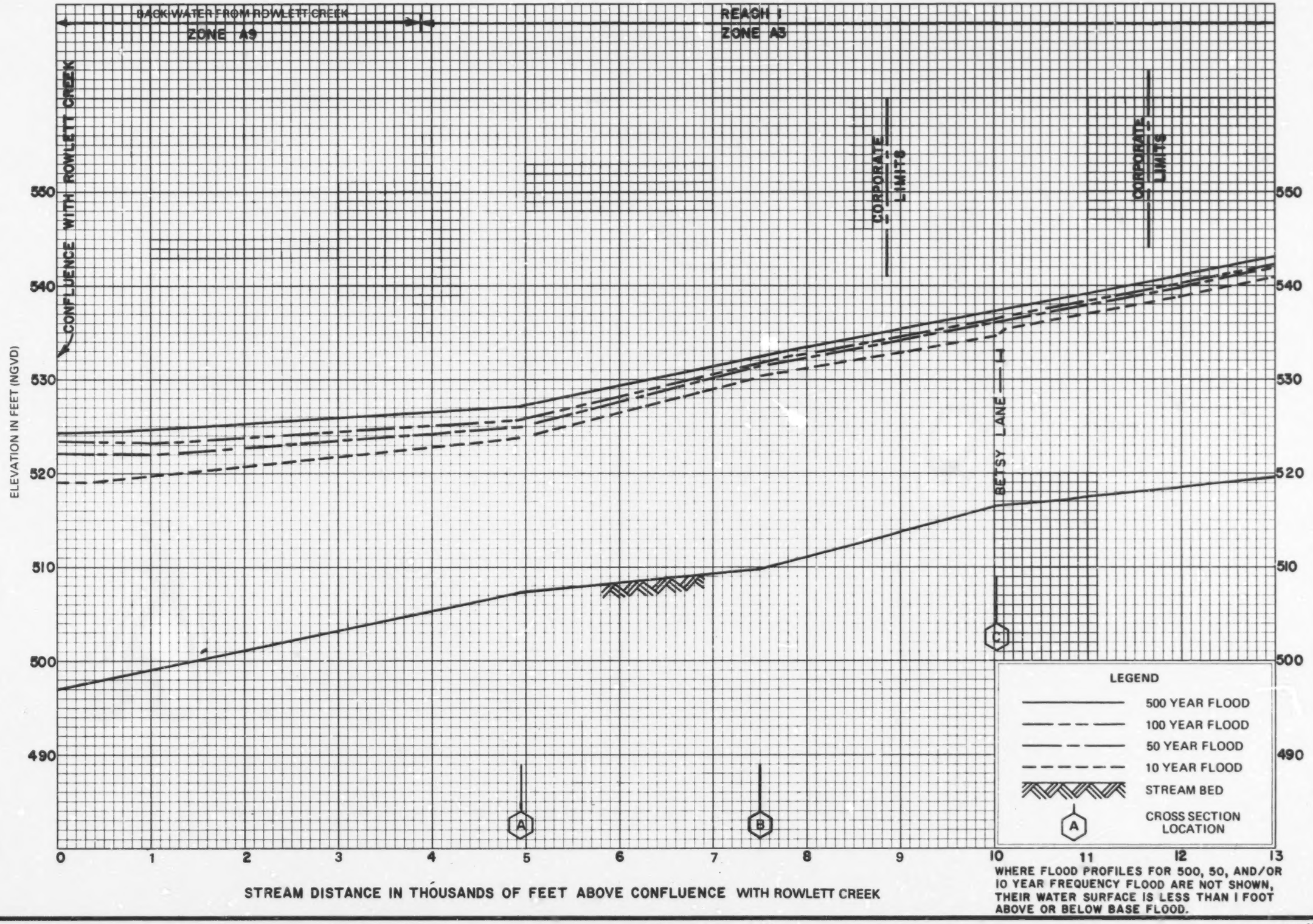

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

COTTONWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

04P

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REACH 1
ZONE A3

REACH 2
ZONE A5

CORPORATE LIMITS

CORPORATE LIMITS

CORPORATE LIMITS

CORPORATE LIMITS

CORPORATE LIMITS

(PARKER ROAD) F.M. 2514

ELEVATION IN FEET (NGVD)

580
570
560
550
540
530
520
510

13 14 15 16 17 18 19 20 21 22 23 24 25 26

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

D E F G

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

COTTONWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

05P

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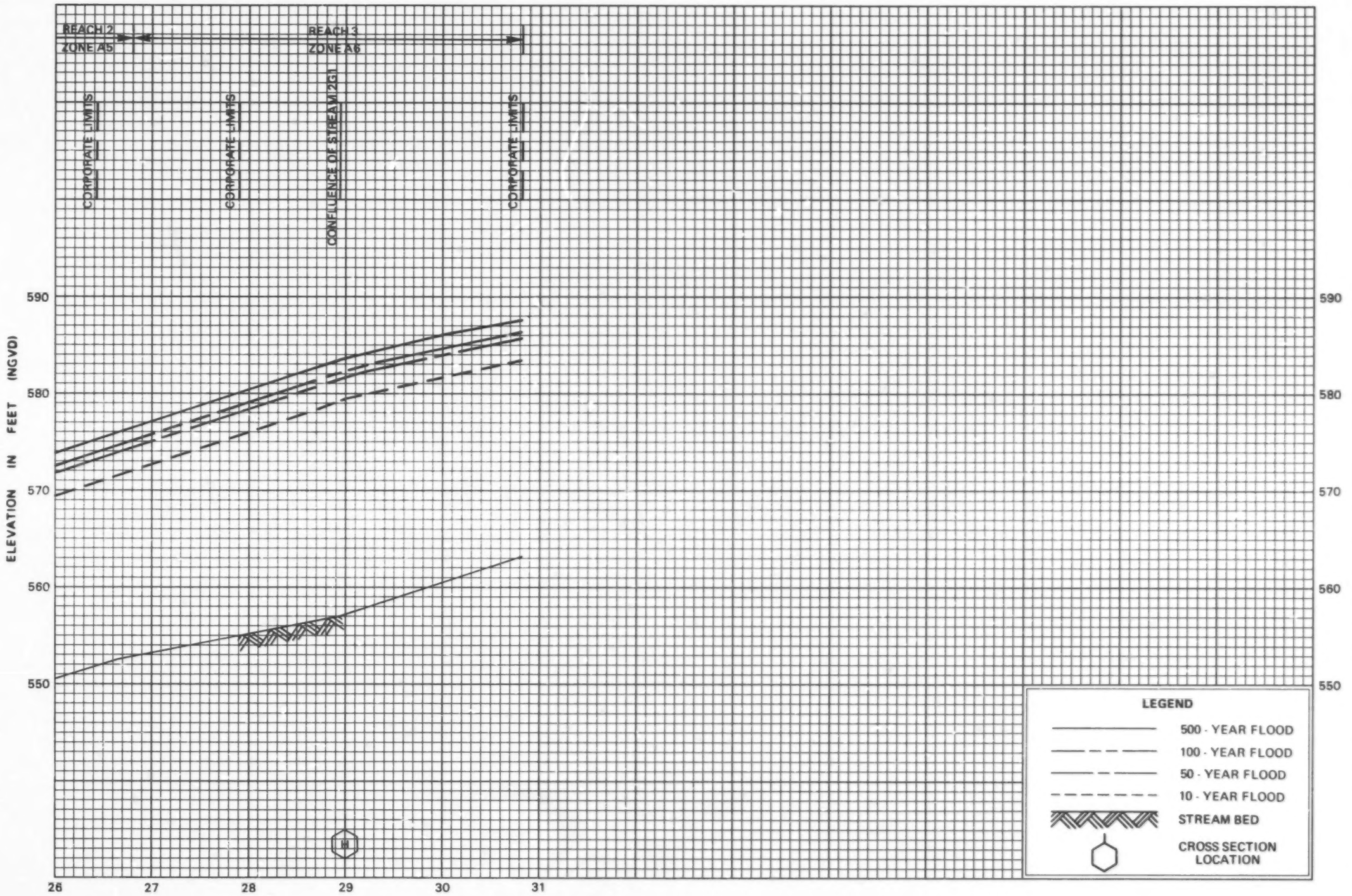

FLOOD PROFILES

COTTONWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

06P

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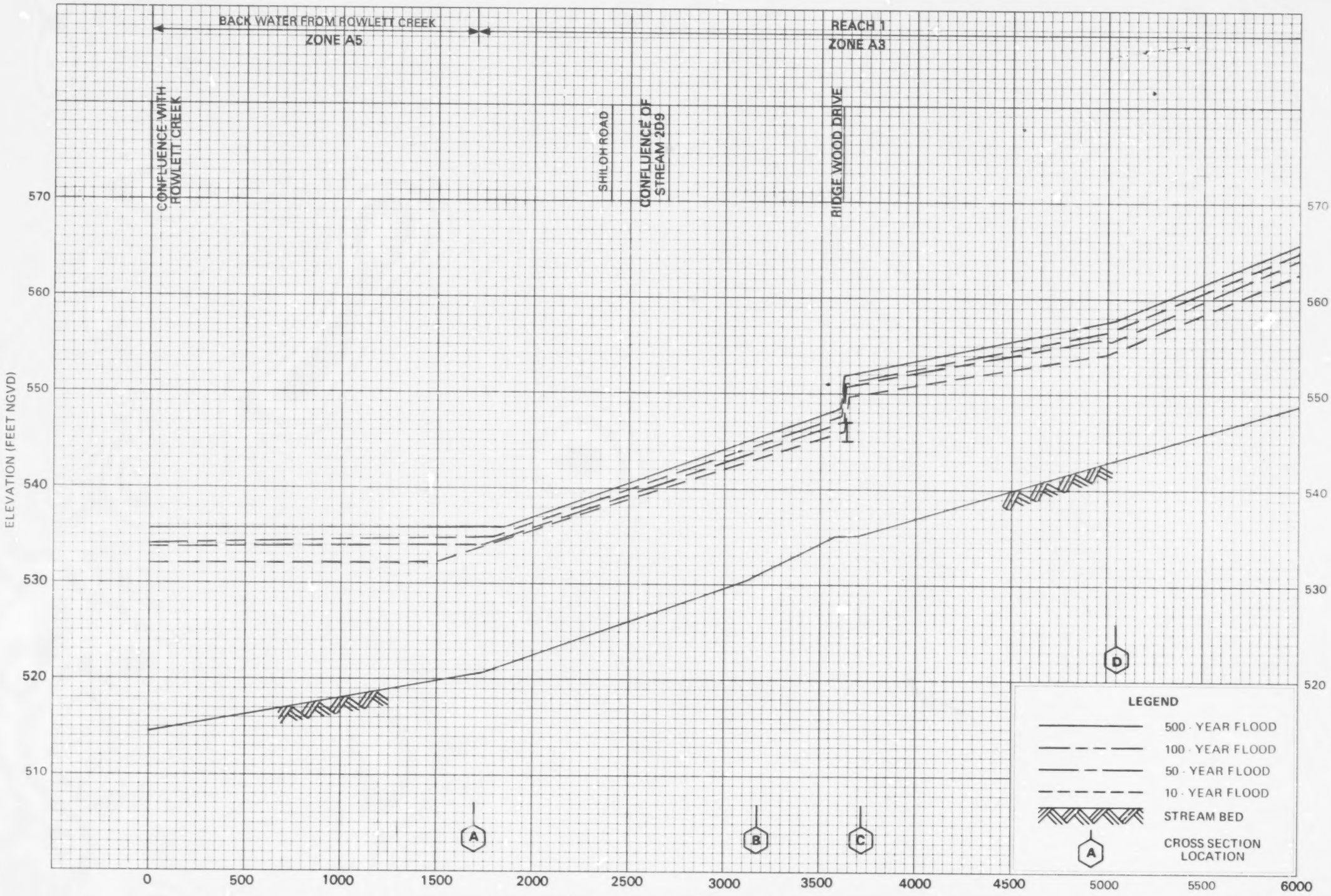

FLOOD PROFILES

STREAM 2D8

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

07P

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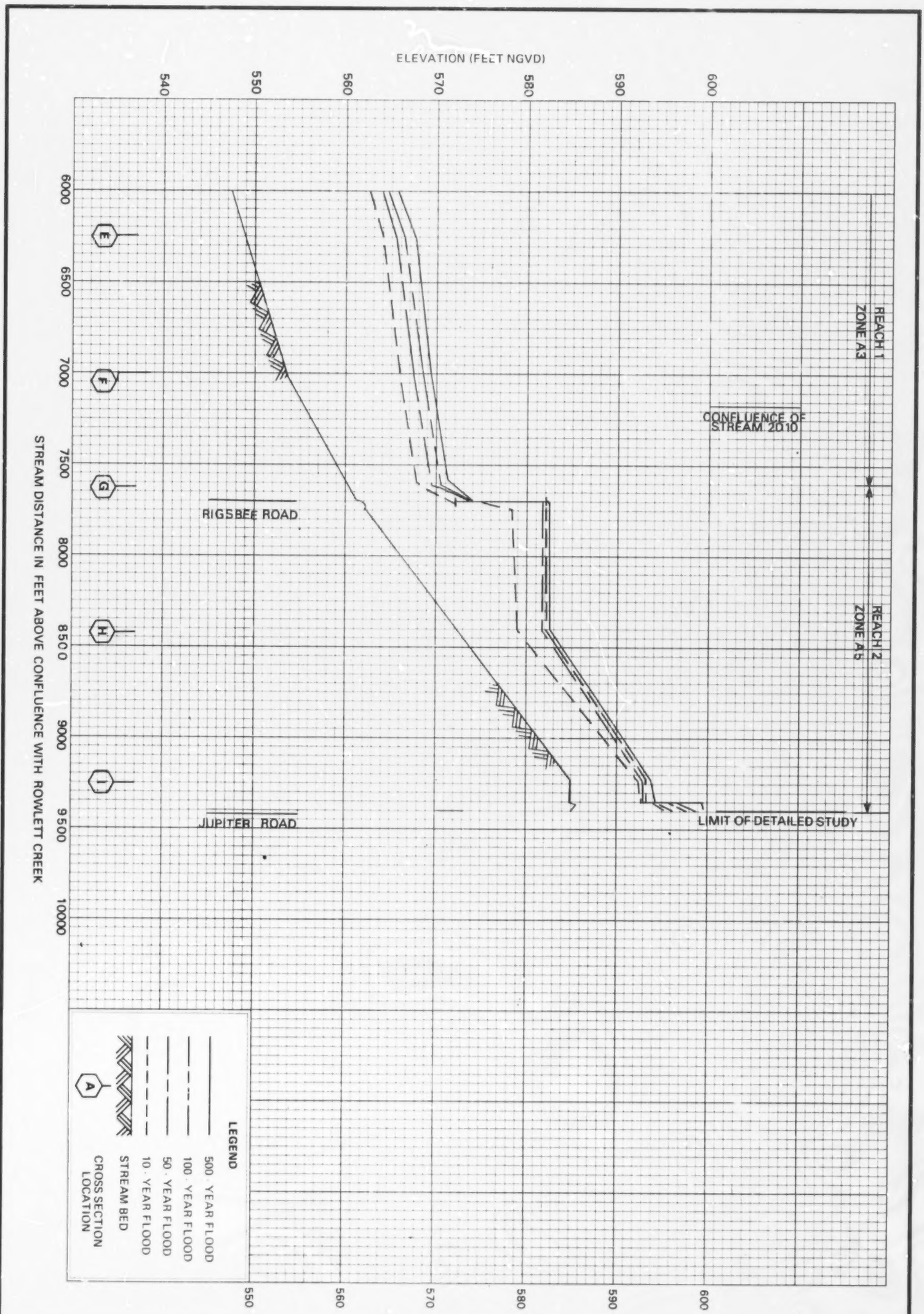


08P

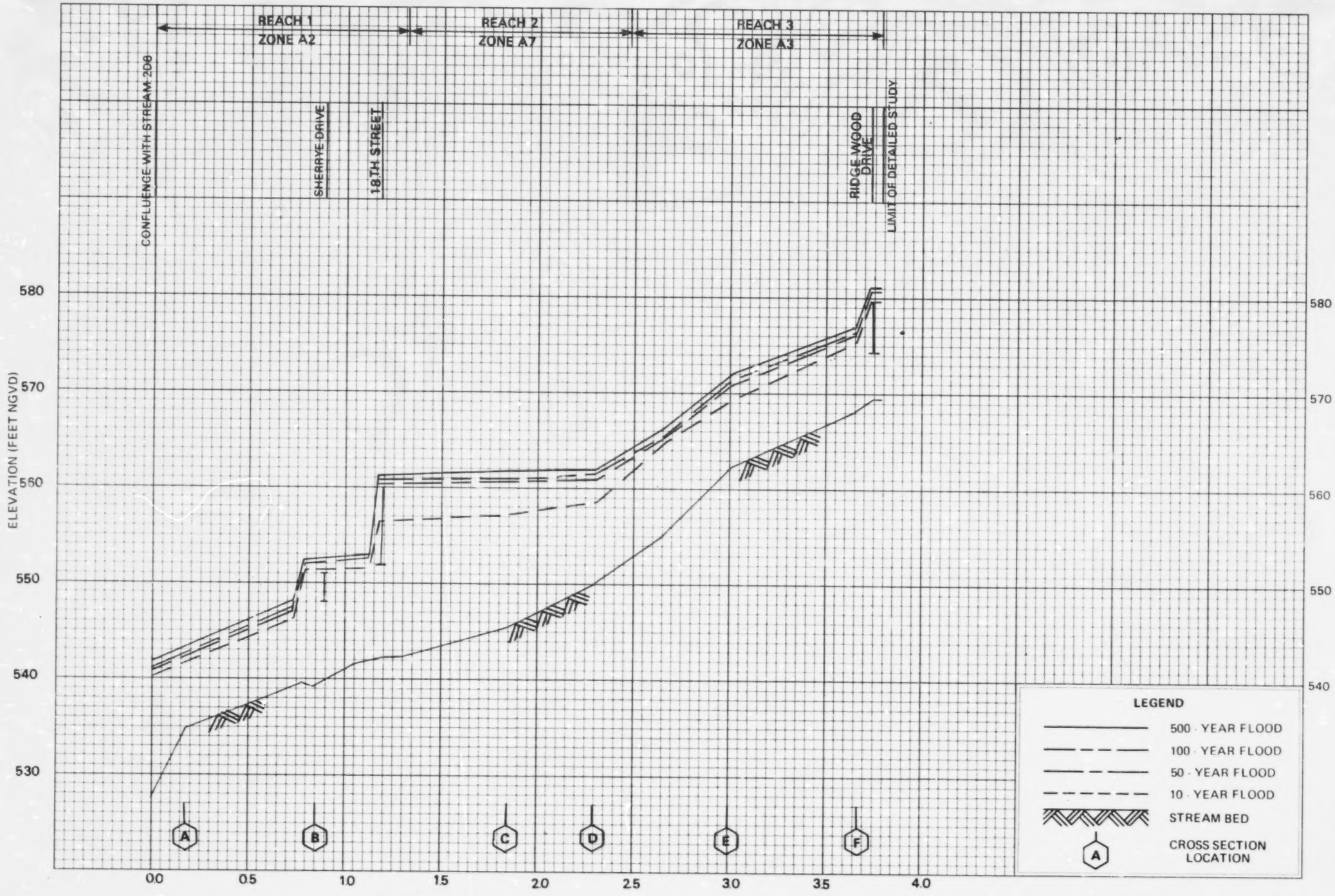
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD PROFILES

STREAM 2D8



FLOOD PROFILES

STREAM 2D9

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

09P

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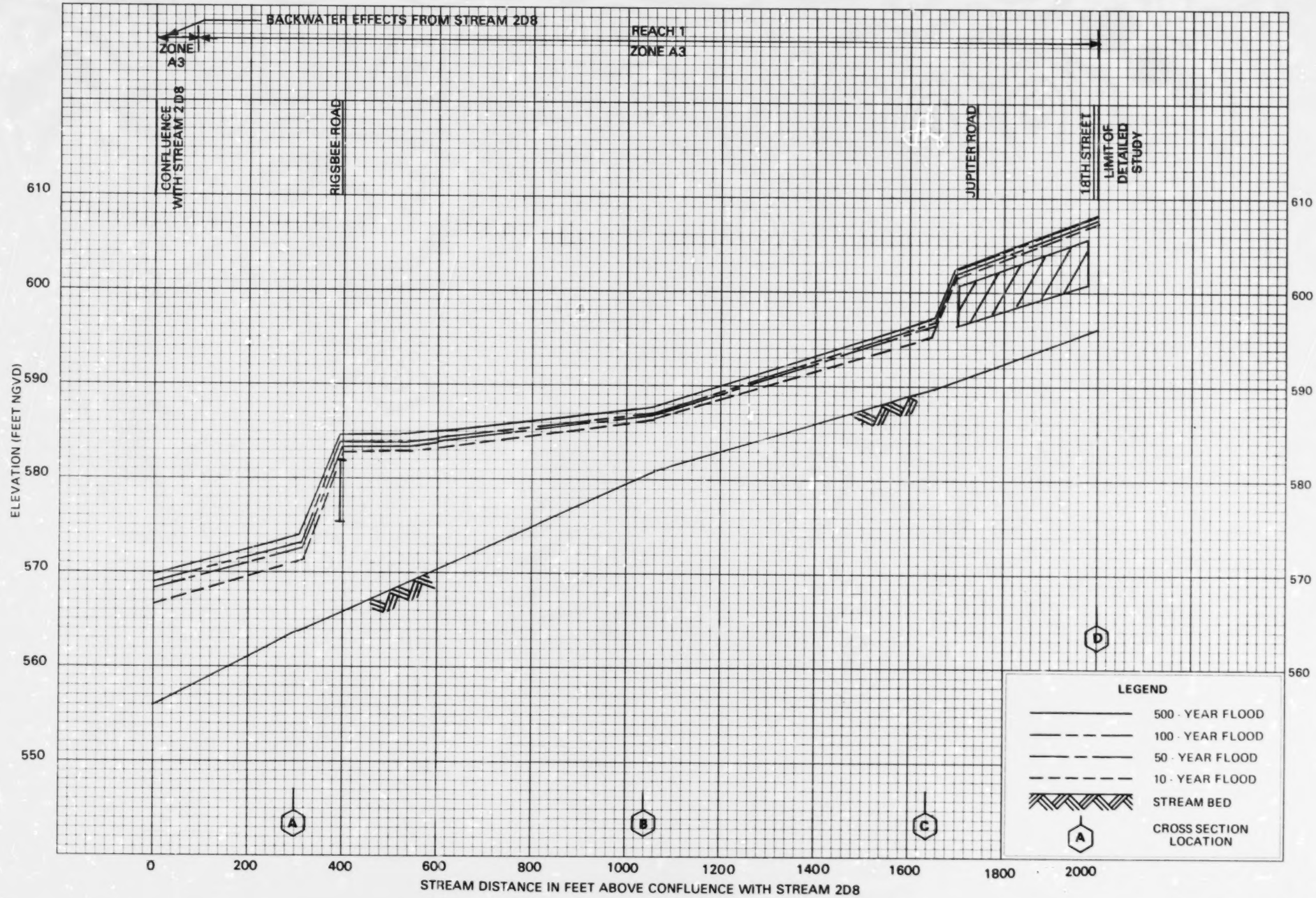

FLOOD PROFILES

STREAM 2D10

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

10P

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FLOOD PROFILES

STREAM 2G1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

11P

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BACKWATER EFFECTS FROM ROWLETT CREEK
ZONE A5

REACH 1
ZONE A4

CONFLUENCE WITH ROWLETT CREEK

CONFLUENCE OF STREAM 2011

PARKER ROAD

CORPORATE LIMITS

JUPITER ROAD

DAM

PRIVATE ROAD

CONFLUENCE OF BOWMAN BRANCH

CORPORATE LIMITS

ELEVATION (FEET NGVD)

590
580
570
560
550
540
530
520

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000

STREAM DISTNCE IN FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

A B C D E F

LEGEND

- 500 - YEAR FLOOD
- 100 - YEAR FLOOD
- 50 - YEAR FLOOD
- 10 - YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

FLOOD PROFILES

BROWN BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

12P

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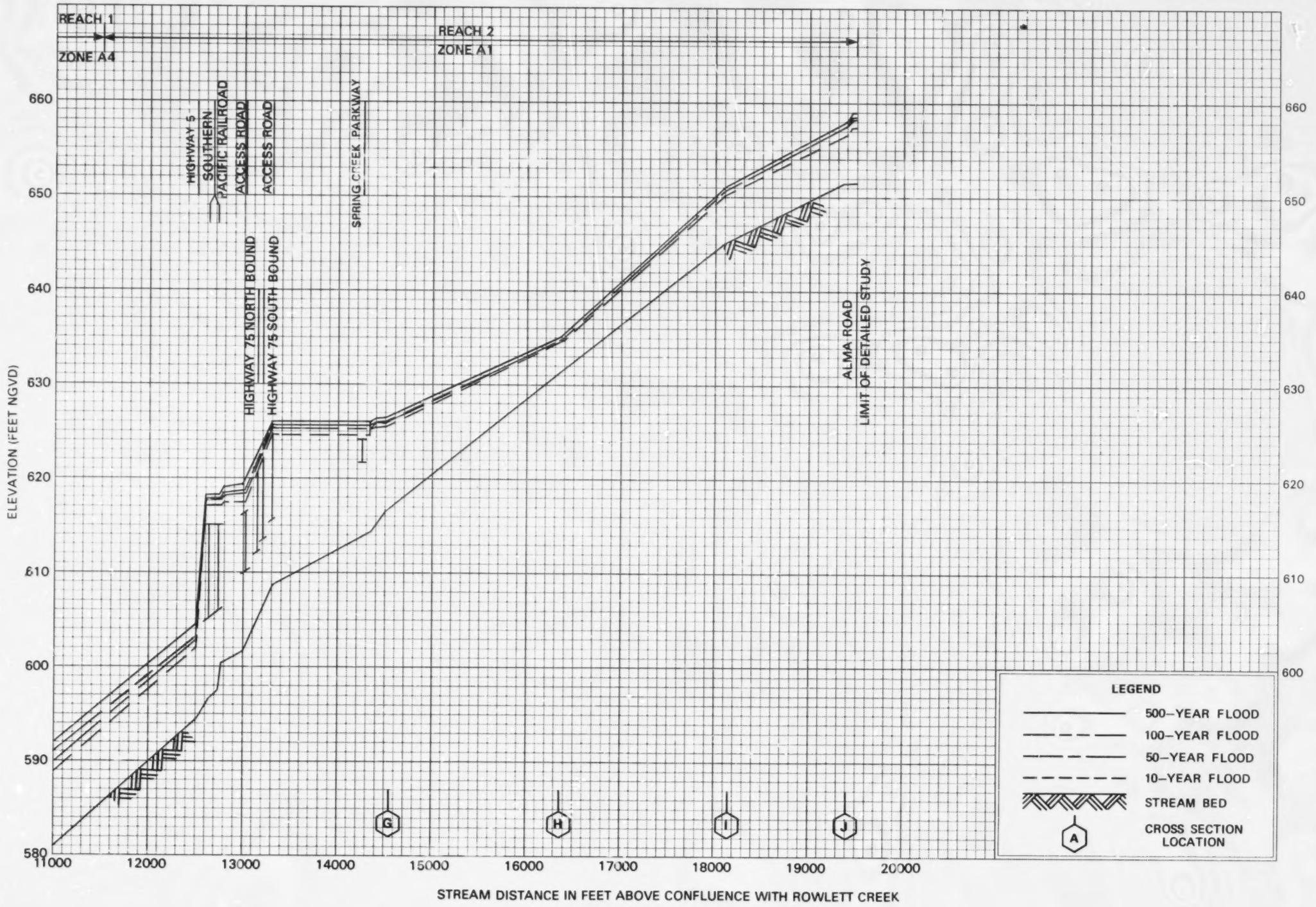

FLOOD PROFILES

BROWN BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

13P

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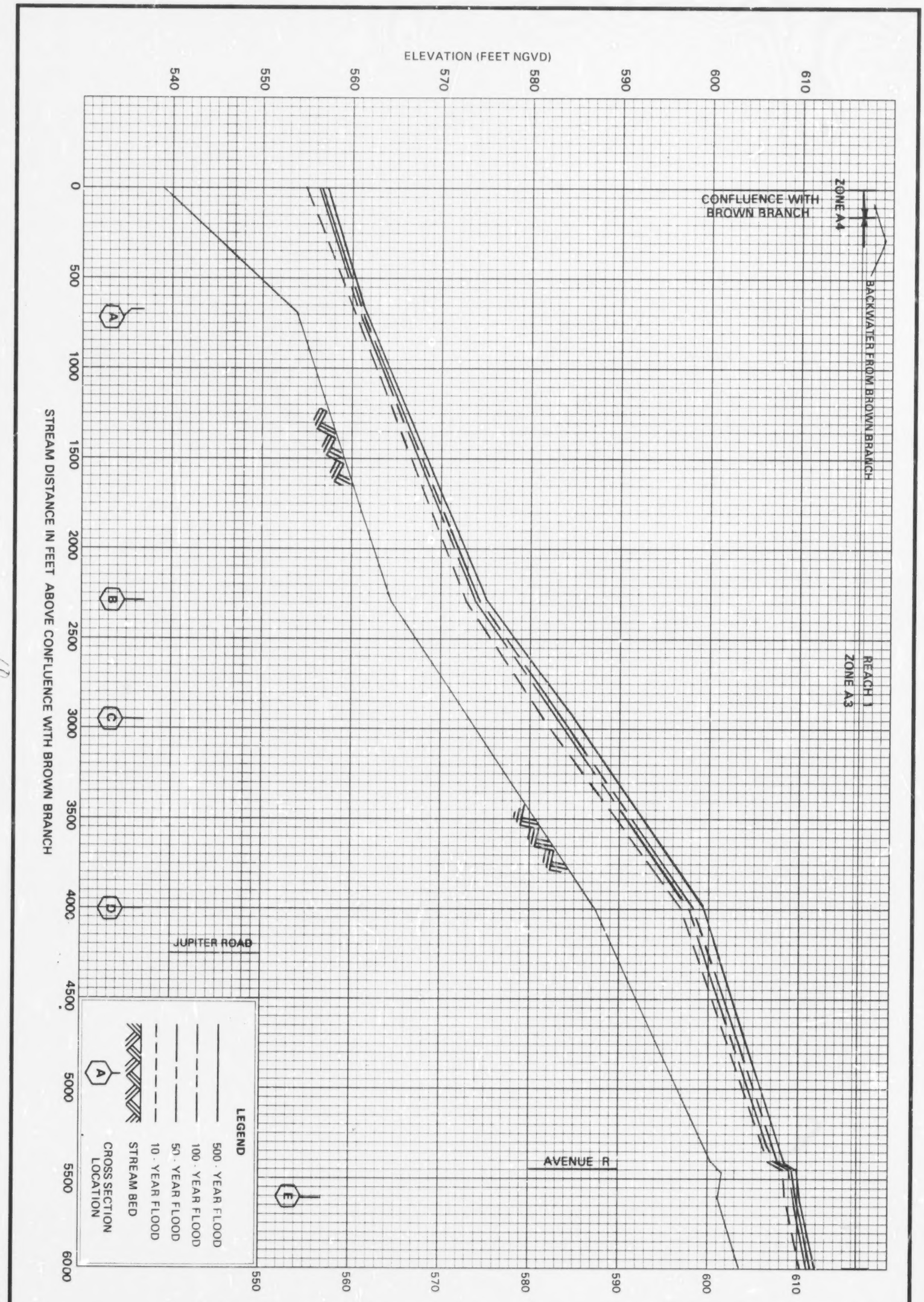

14P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD PROFILES

STREAM 2D11

BEST COPY AVAILABLE

FLOOD PROFILES

STREAM 2D11

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

15P

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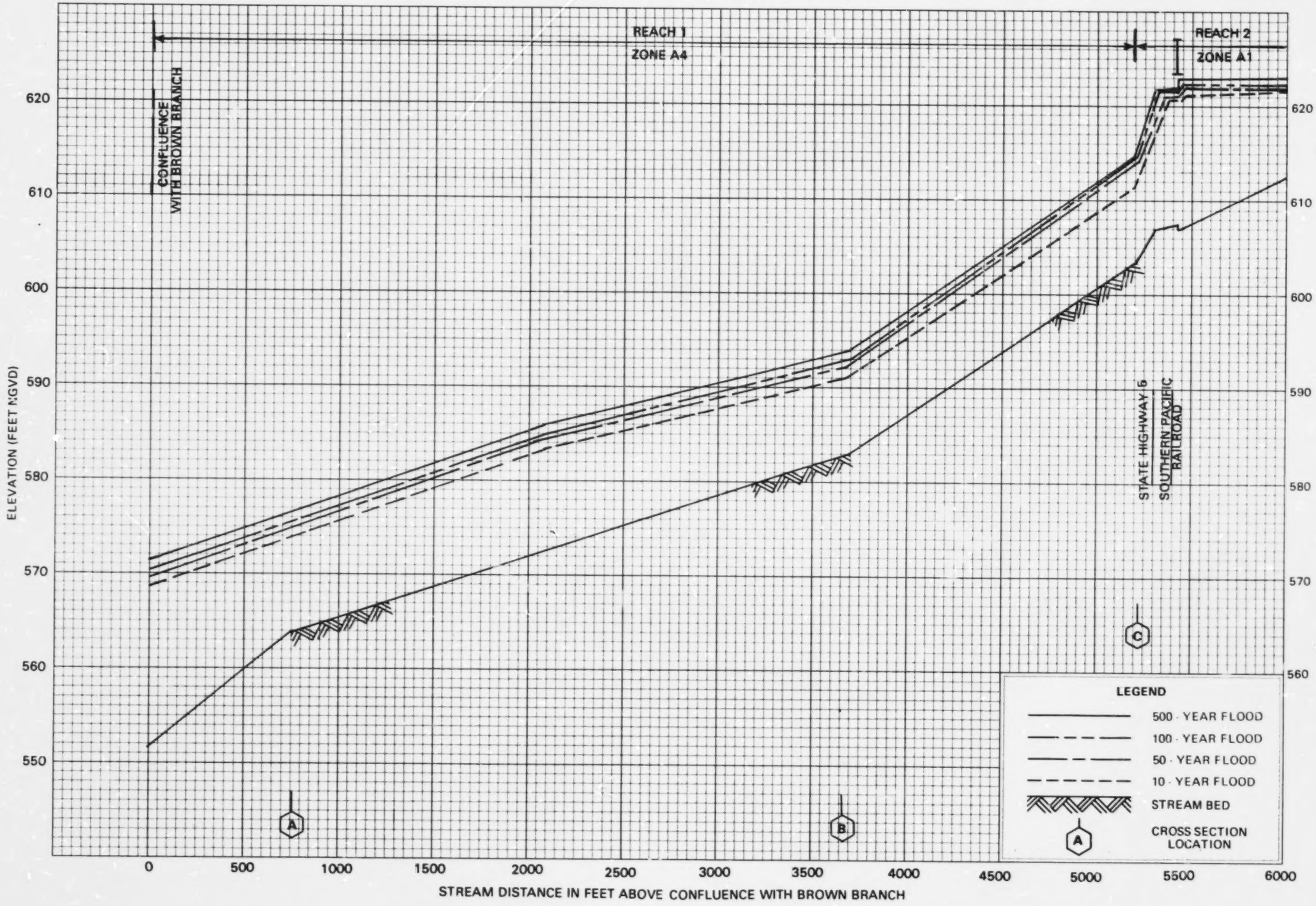

FLOOD PROFILES

BOWMAN BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

16P

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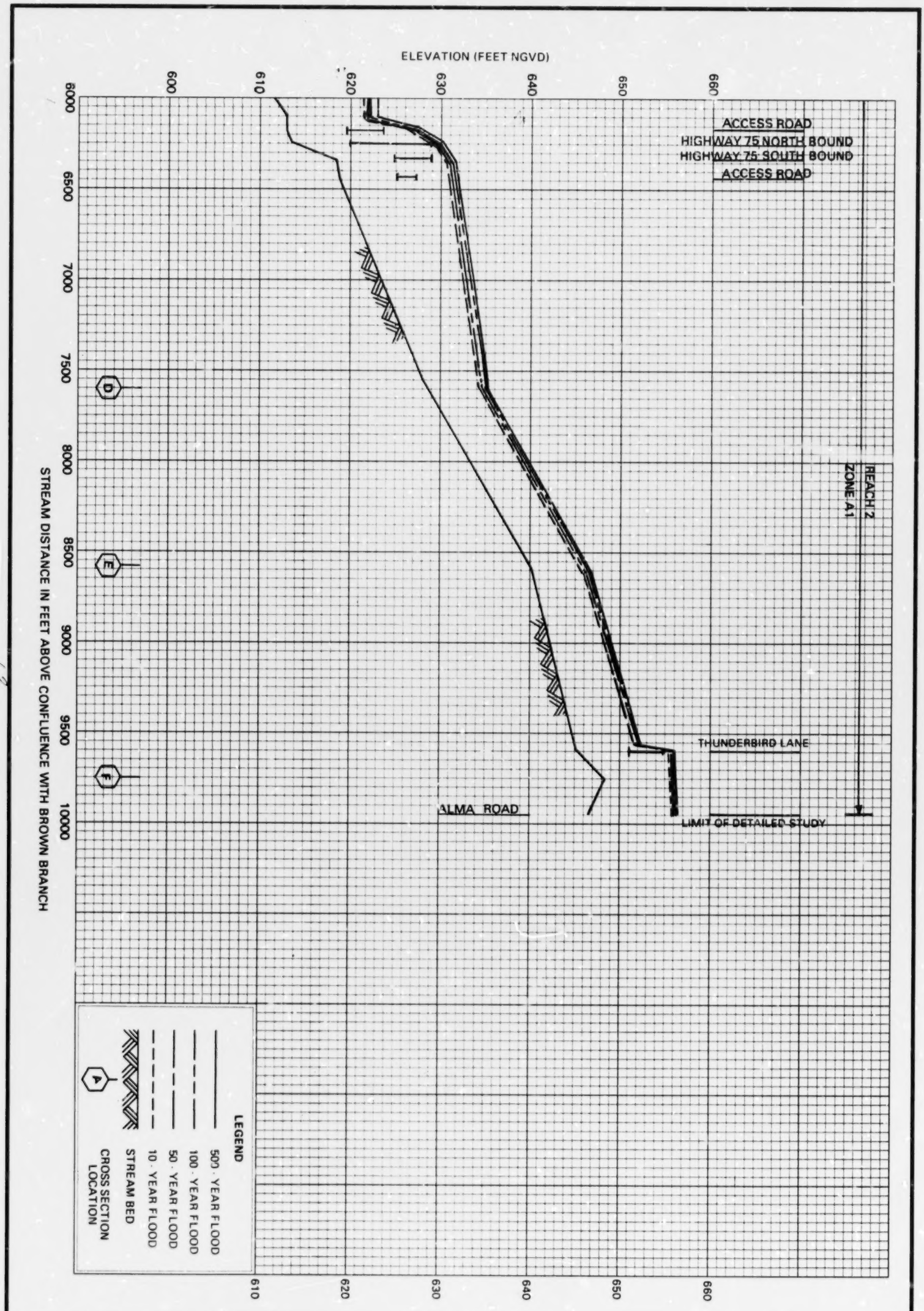

17P	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PLANO, TX (COLLIN AND DENTON COS.)	FLOOD PROFILES · BOWMAN BRANCH

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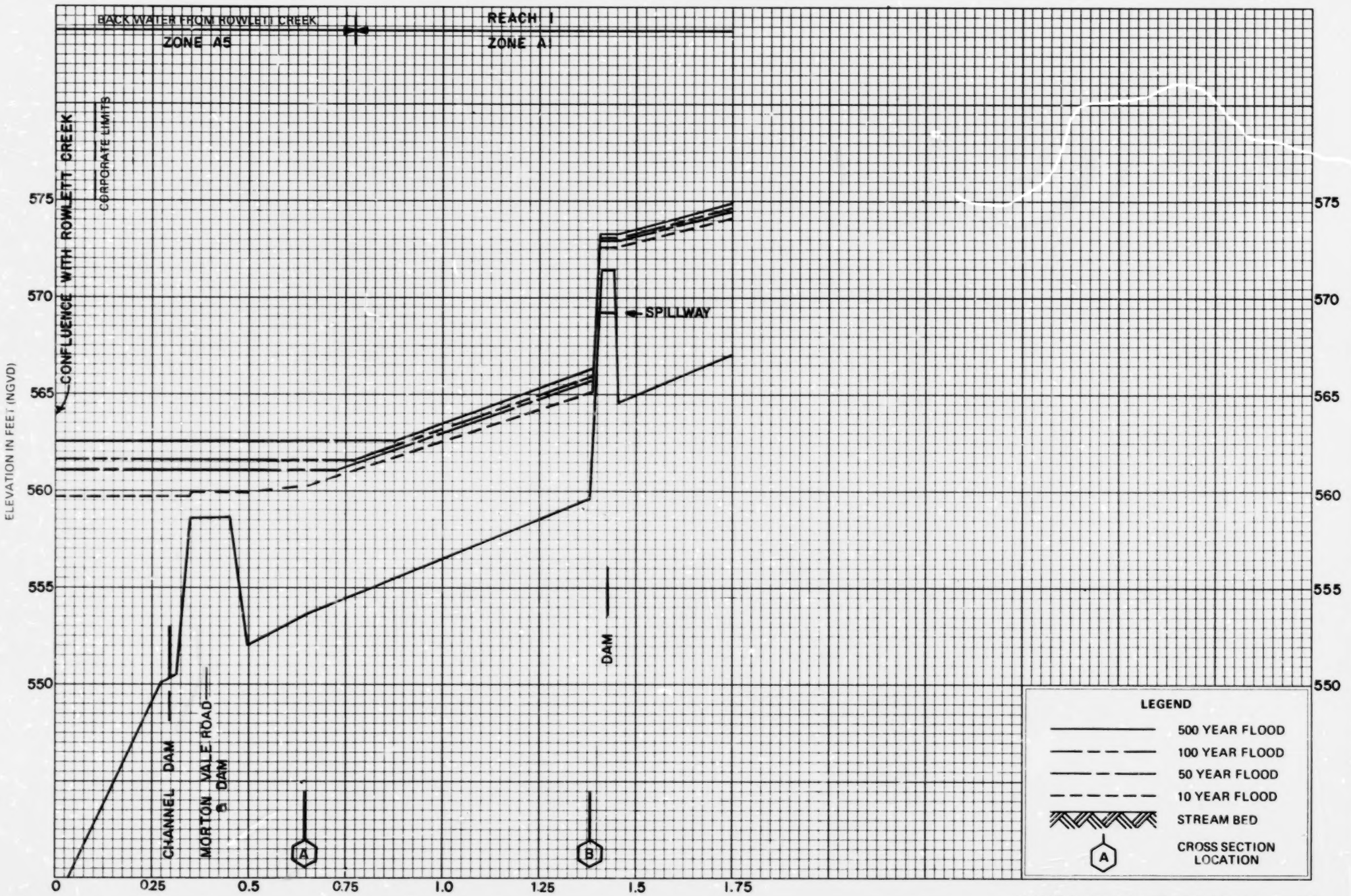

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 2D12

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

18P

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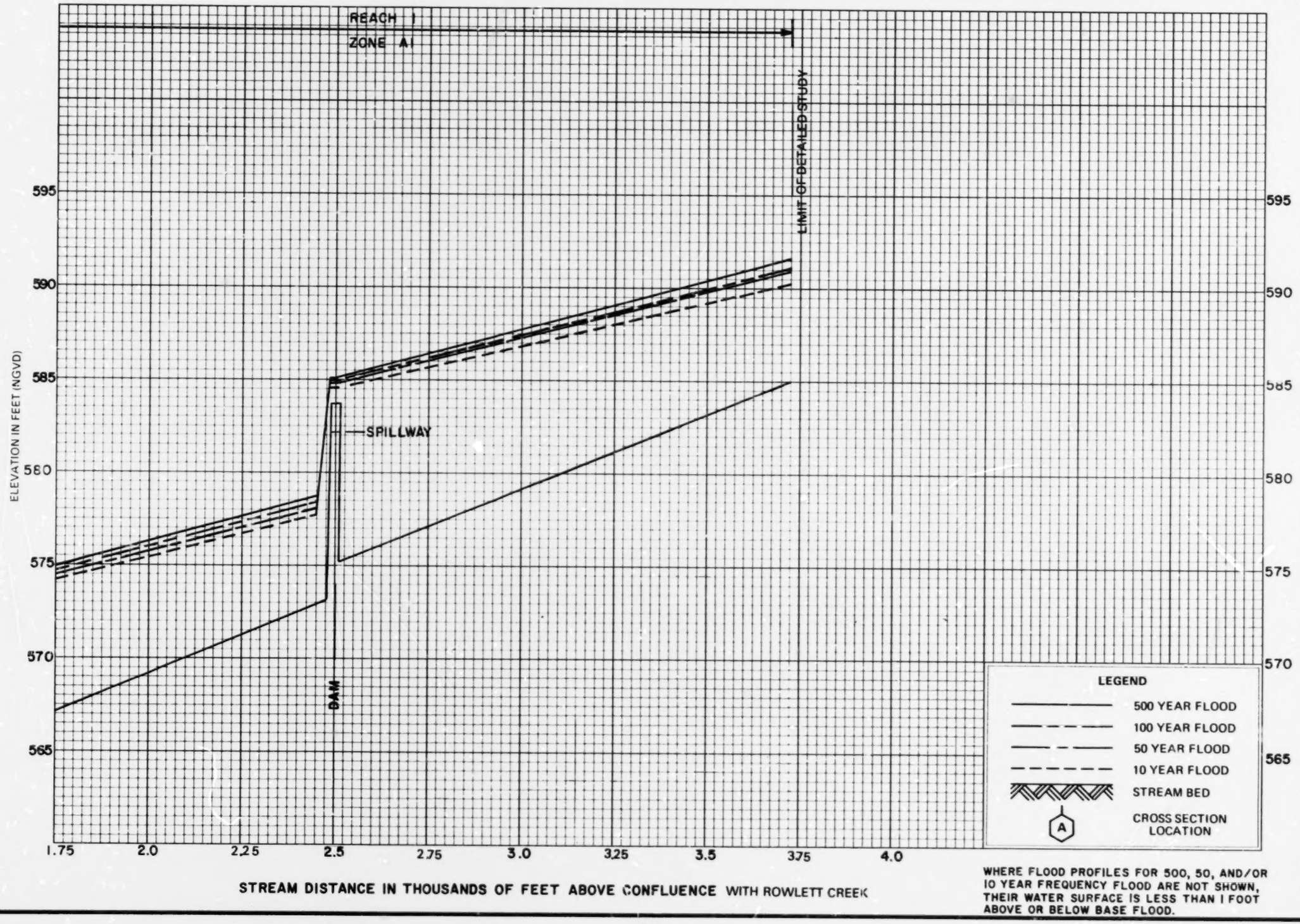

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 2D12

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

19P

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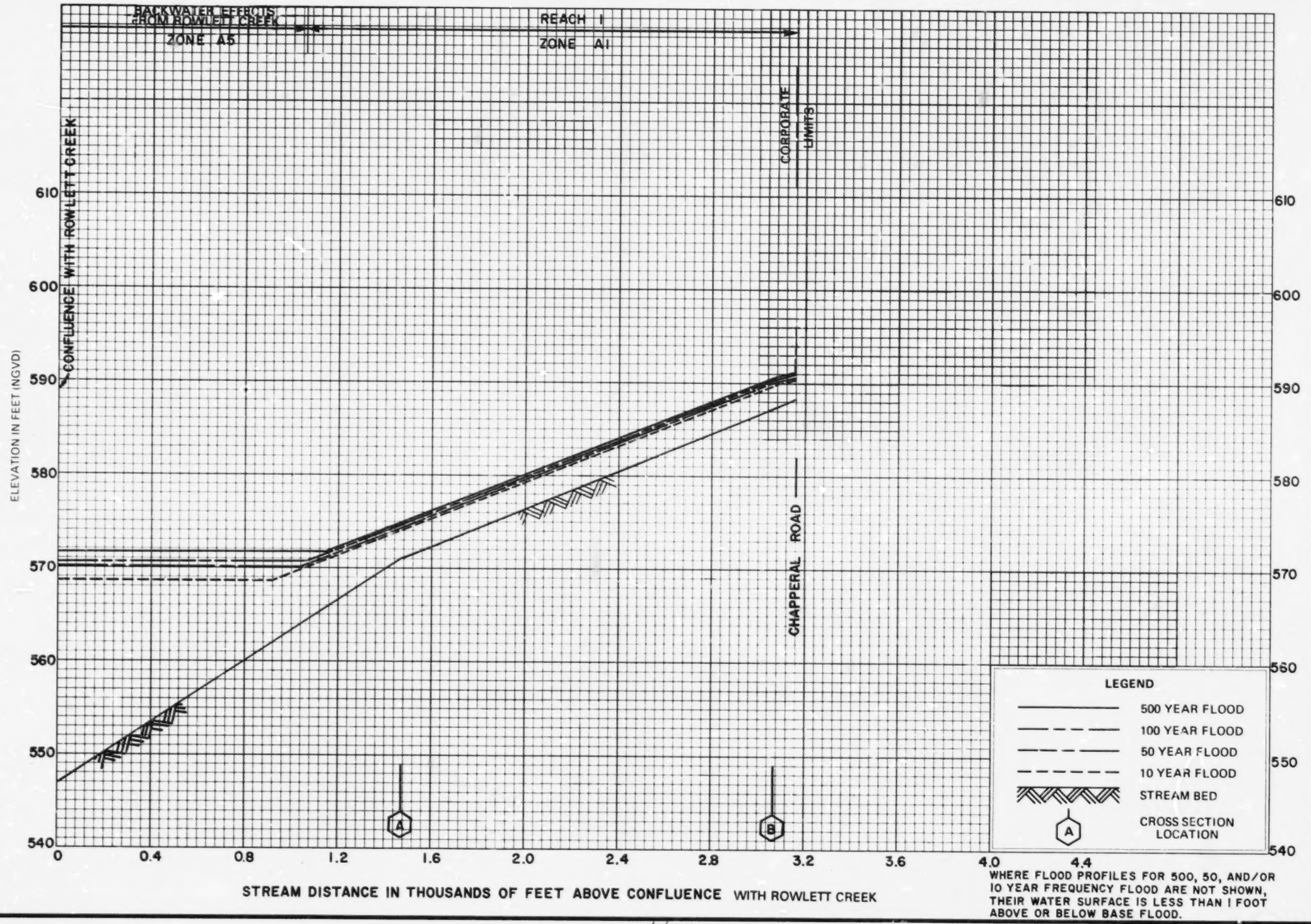

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 2015

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

20P

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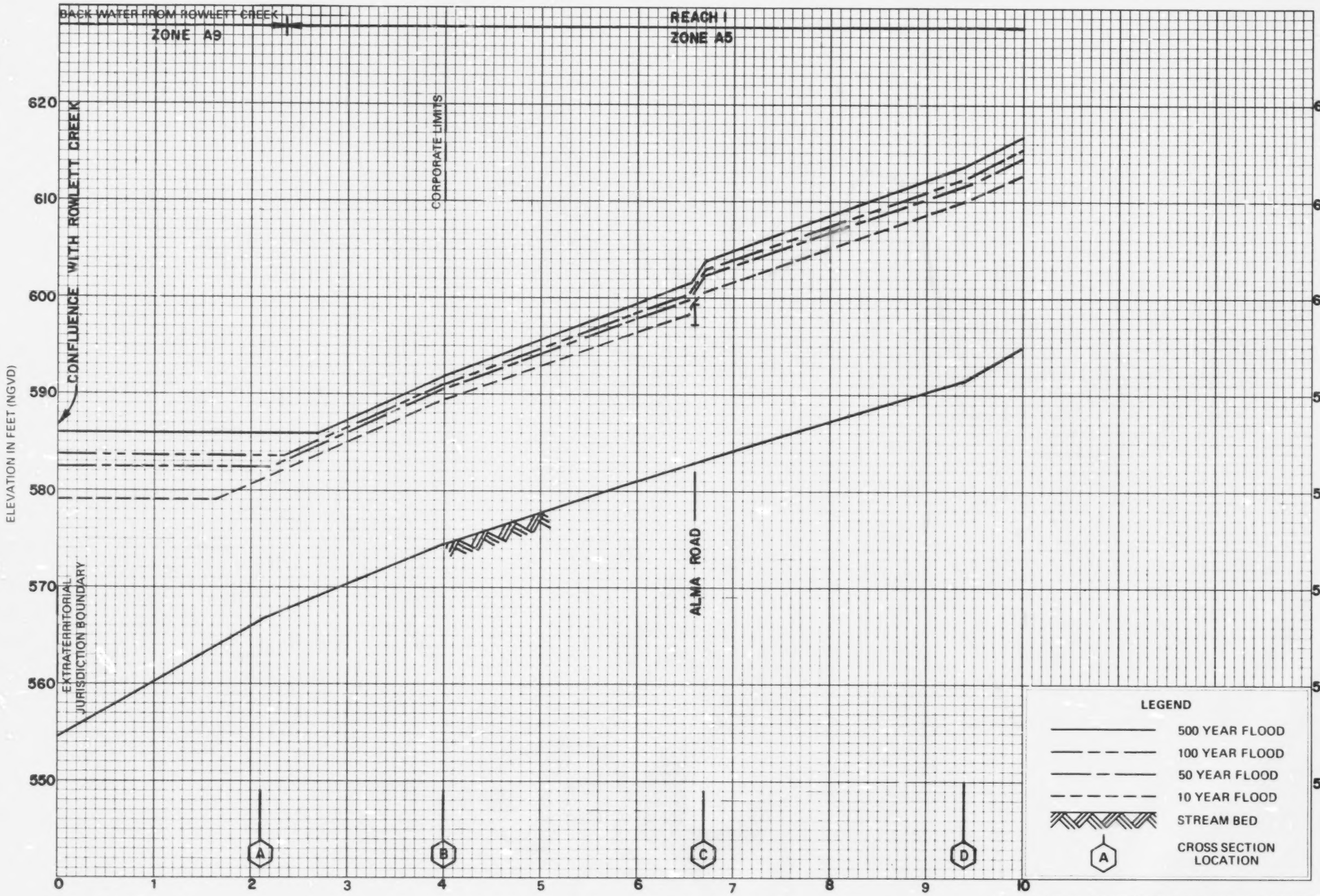

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

RUSSELL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

21P

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REACH 1
ZONE A5

ELEVATION IN FEET (NGVD)

660
650
640
630
620
610
600
590

10 11 12 13 14 15 16

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

E F

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

RUSSELL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

22P

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REACH 1
ZONE A5

CORPORATE LIMITS
EXTRATERRITORIAL JURISDICTION BOUNDARY
LIMIT OF DETAILED STUDY
KATHERINE ROAD
HEDDECOKE ROAD
F.M. 2478 (CUSTER ROAD)
CORPORATE LIMITS

ELEVATION IN FEET (NGVD)

710 700 690 680 670 660 650 640 630 620

16 17 18 19 20 21 22 23 24 25

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

LEGEND
- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

RUSSELL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

23P

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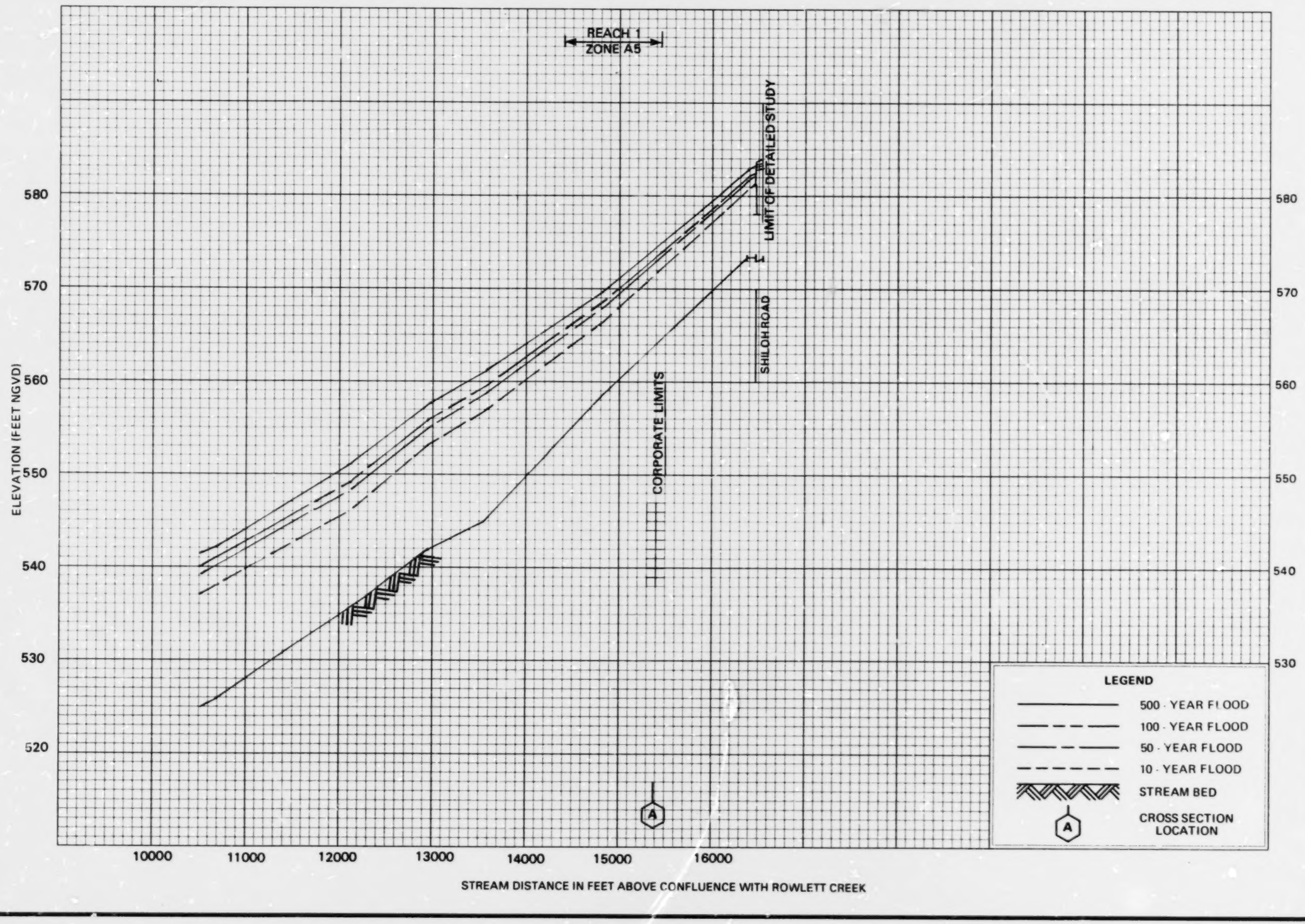

FLOOD PROFILES

BECK BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

24P

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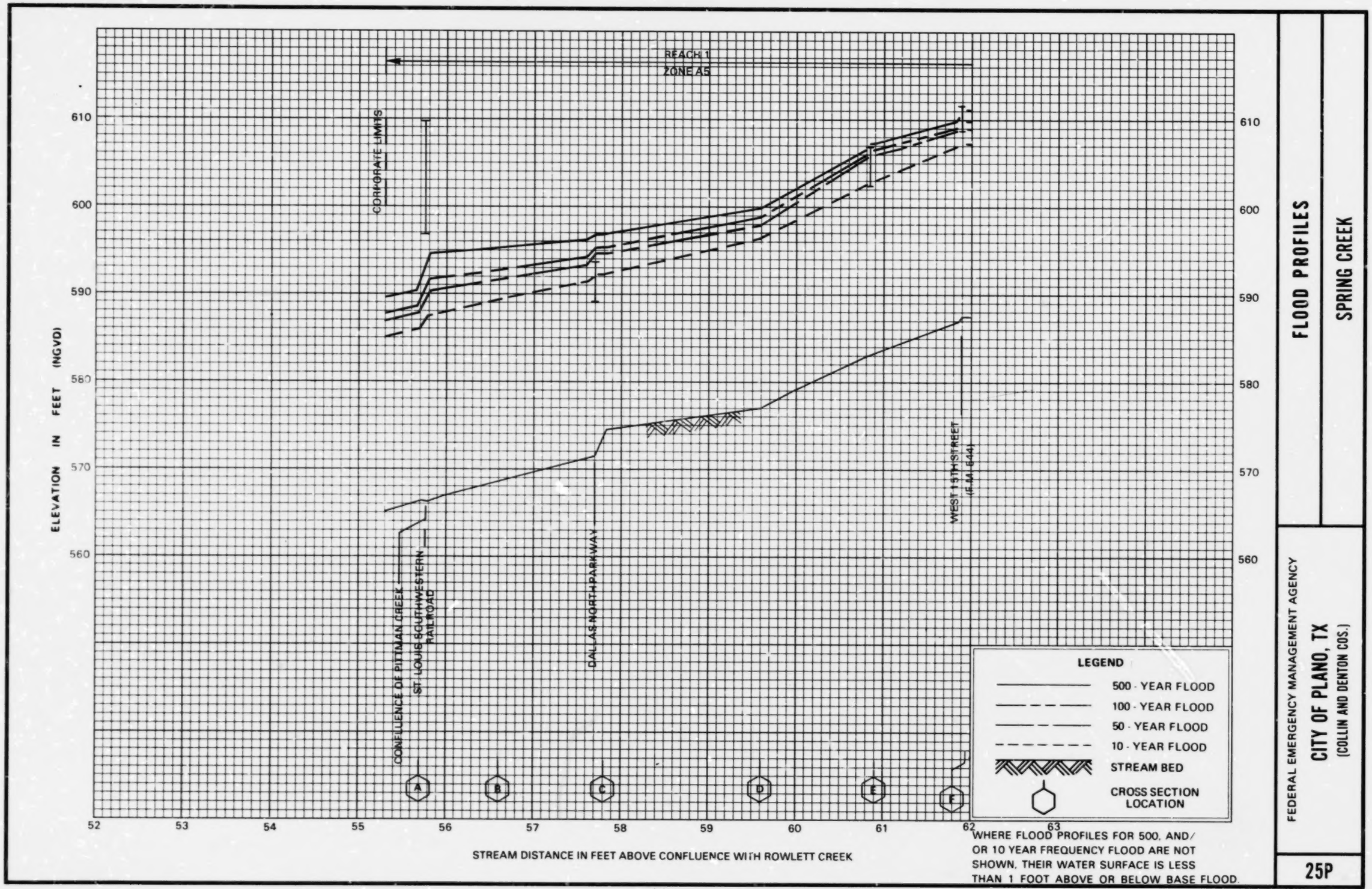


FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

25P

BEST COPY AVAILABLE

REACH 1
ZONE AE

ELEVATION IN FEET (NGVD)

650
640
630
620
610
600
590
580

PARK BOULEVARD

WEST 16TH STREET

CONFLUENCE OF STREAM 219

PARKER ROAD

CONCRETE DAM

G
H
I
J
K

62 63 64 65 66 67 68 69 70 71 72 73 74

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

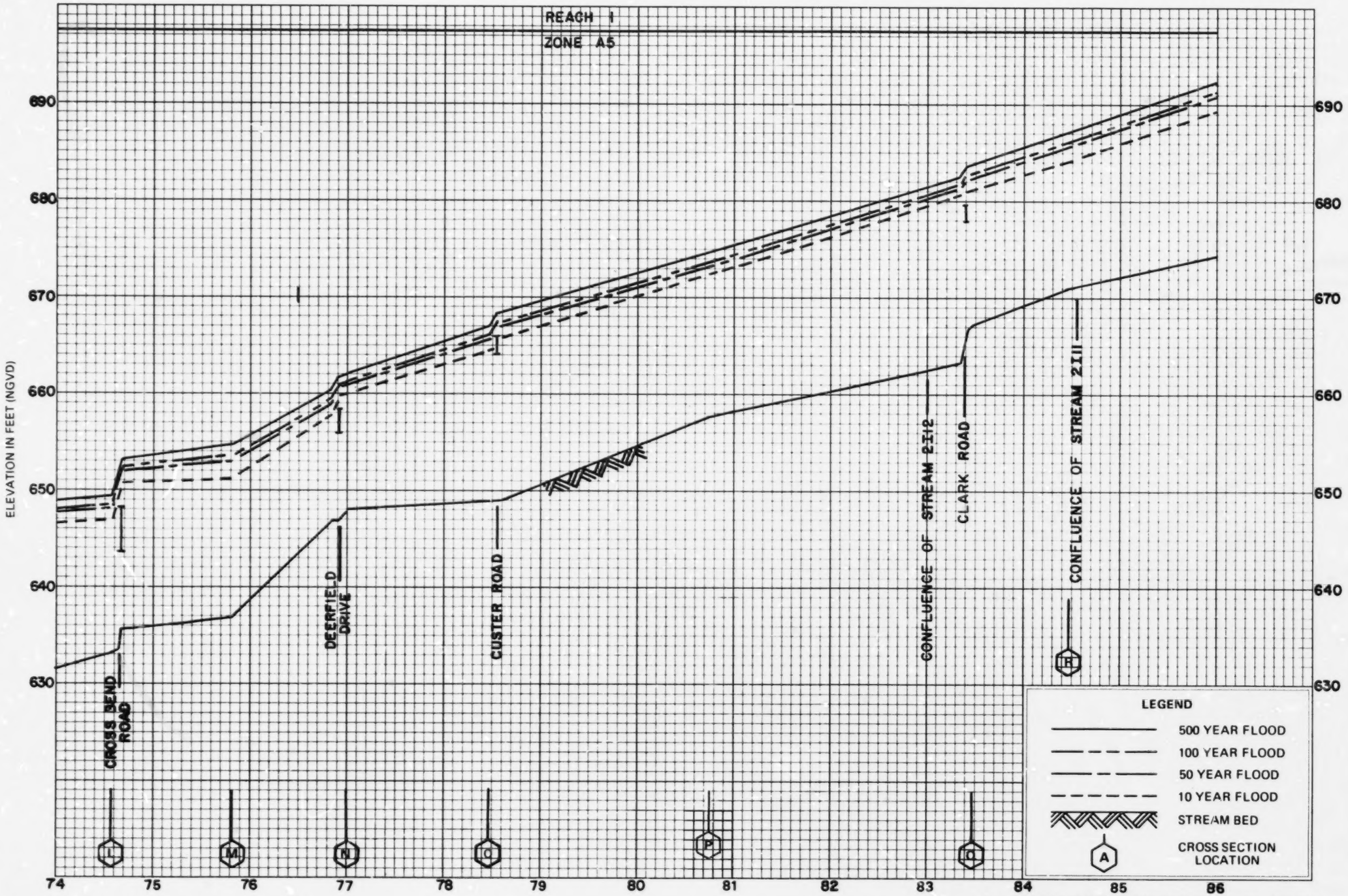
CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

26P

BEST COPY AVAILABLE

REACH 1

ZONE A5



STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

27P

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REACH 1
ZONE A5

REACH 2
ZONE A1

LIMIT OF DETAILED STUDY

QUINCY LANE

CARPENTER ROAD

STILLWELL ROAD

ELEVATION IN FEET (NGVD)

740
730
720
710
700
690
680
670

86 87 88 89 90 91 92 93 94 95 96

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH ROWLETT CREEK

S T U V W

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

28P

174

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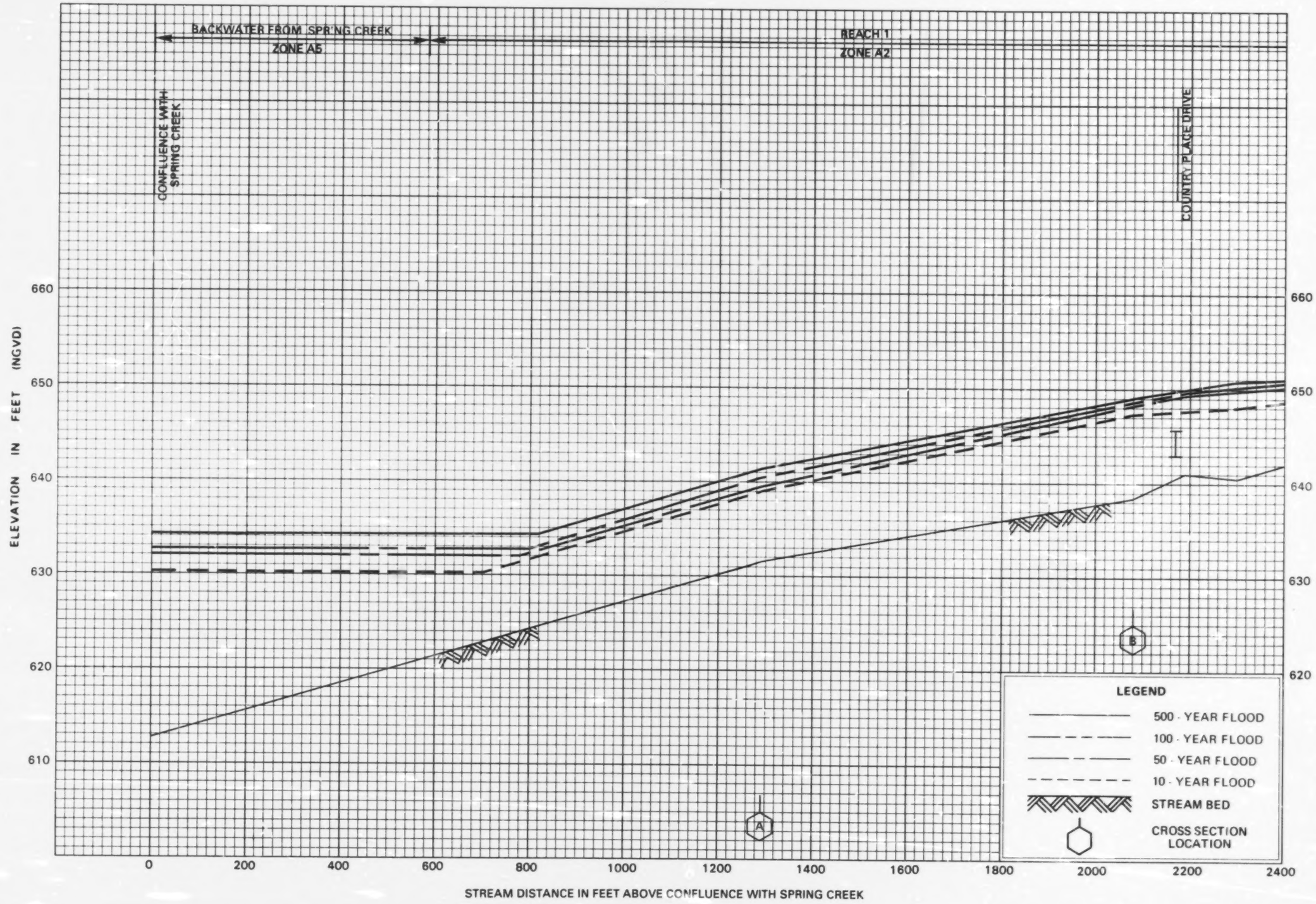

FLOOD PROFILES

STREAM 219

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

29P

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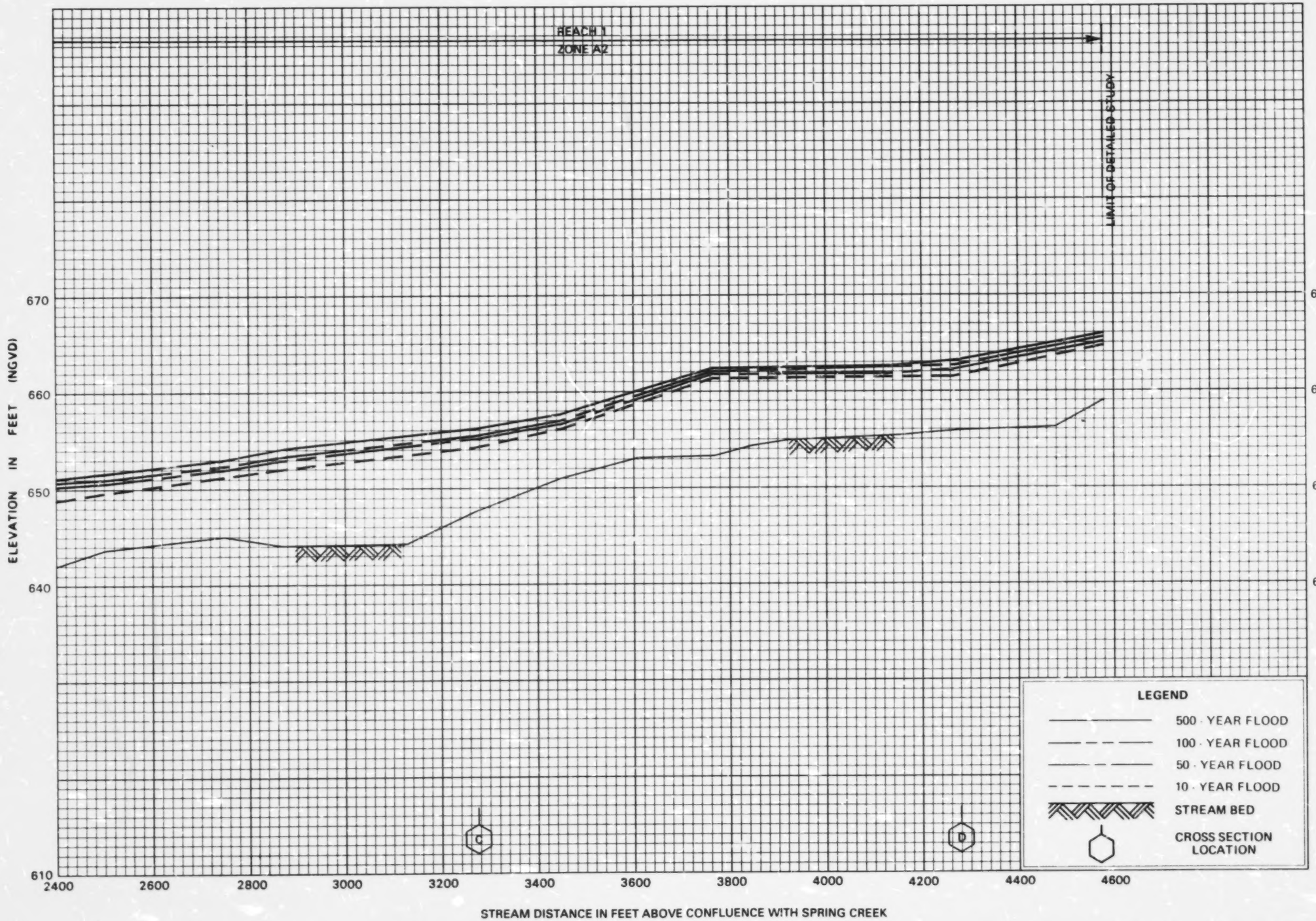


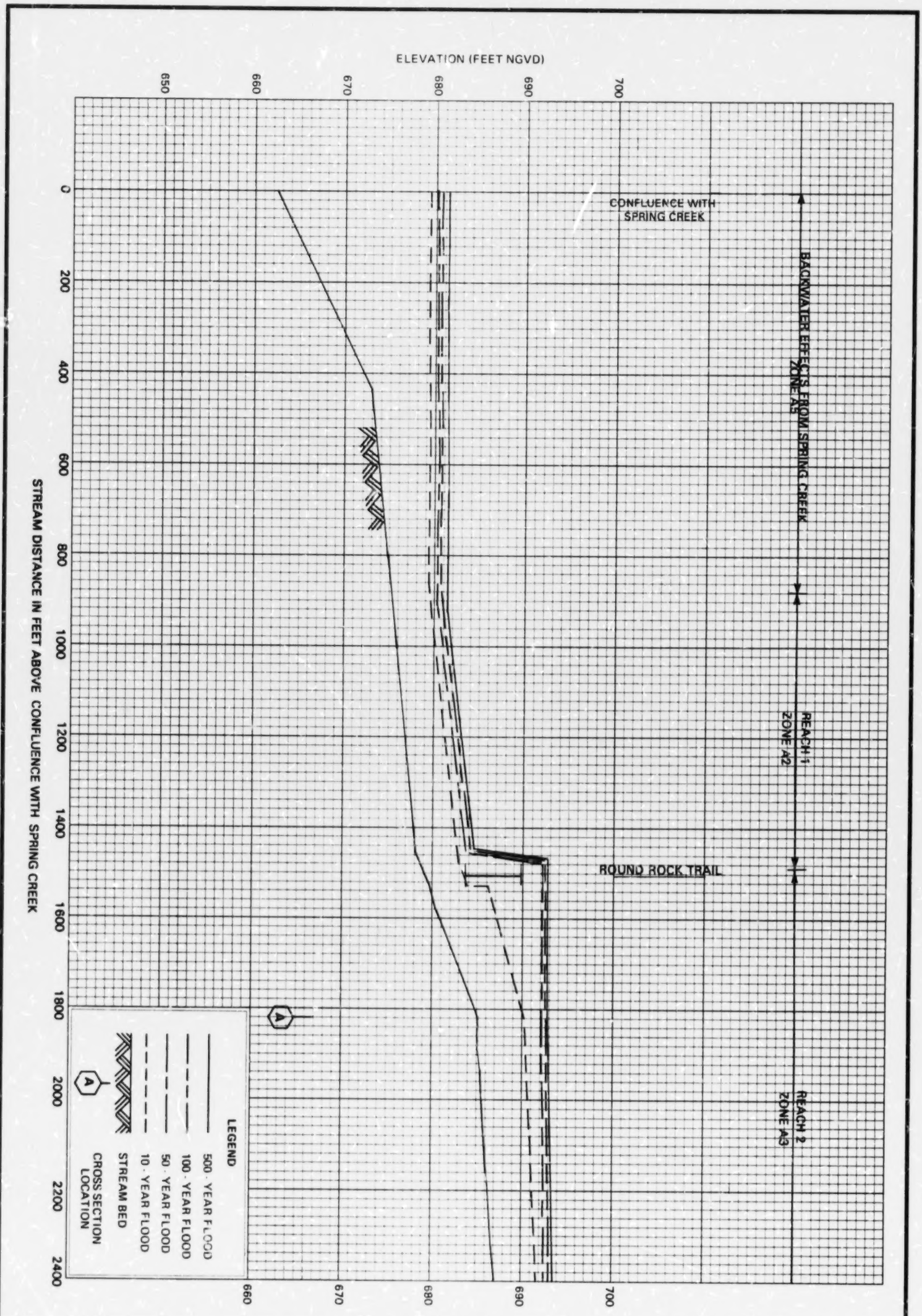
FLOOD PROFILES

STREAM 219

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

30P



31P	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PLANO, TX (COLLIN AND DENTON COS.)	FLOOD PROFILES STREAM 2112

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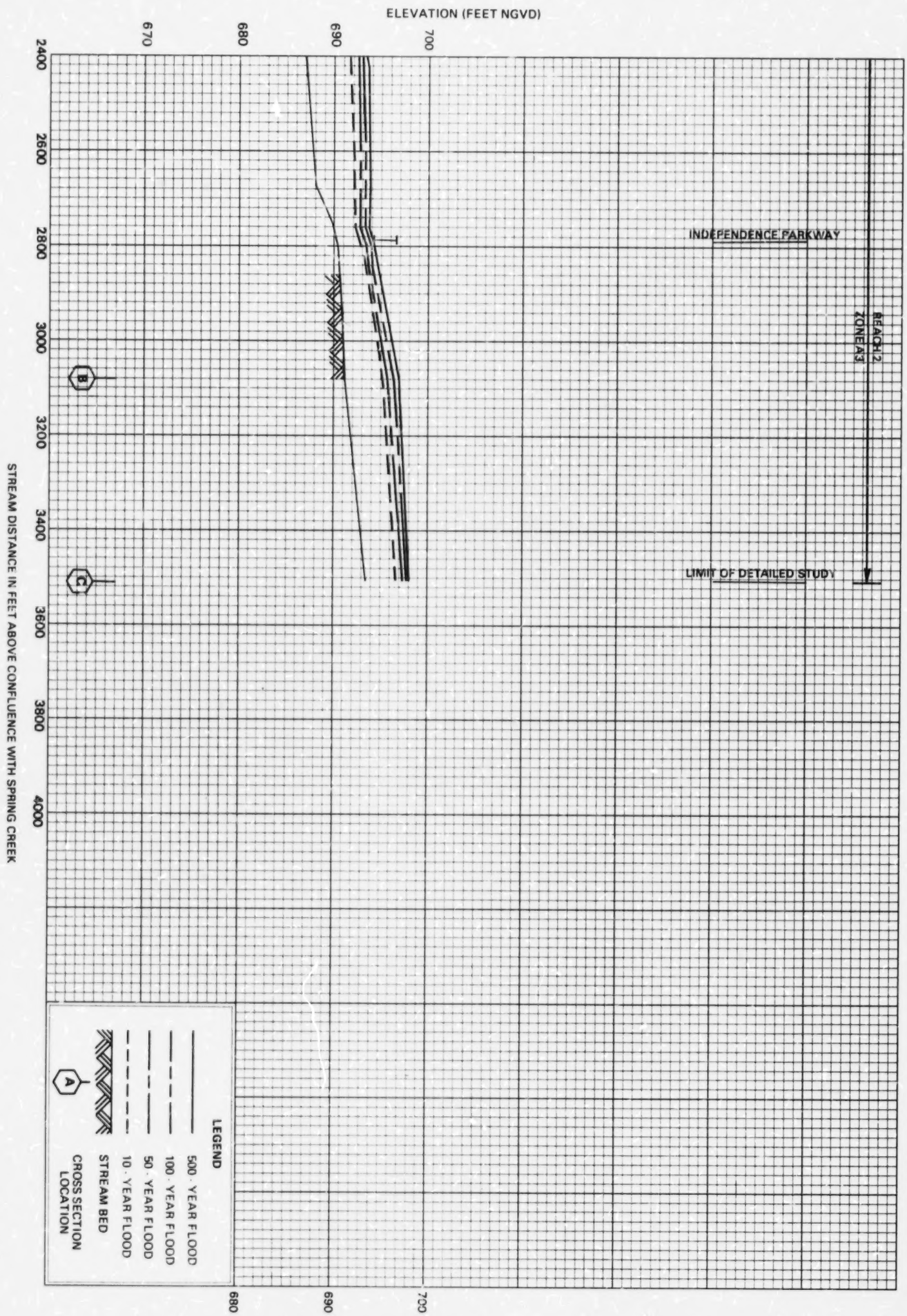
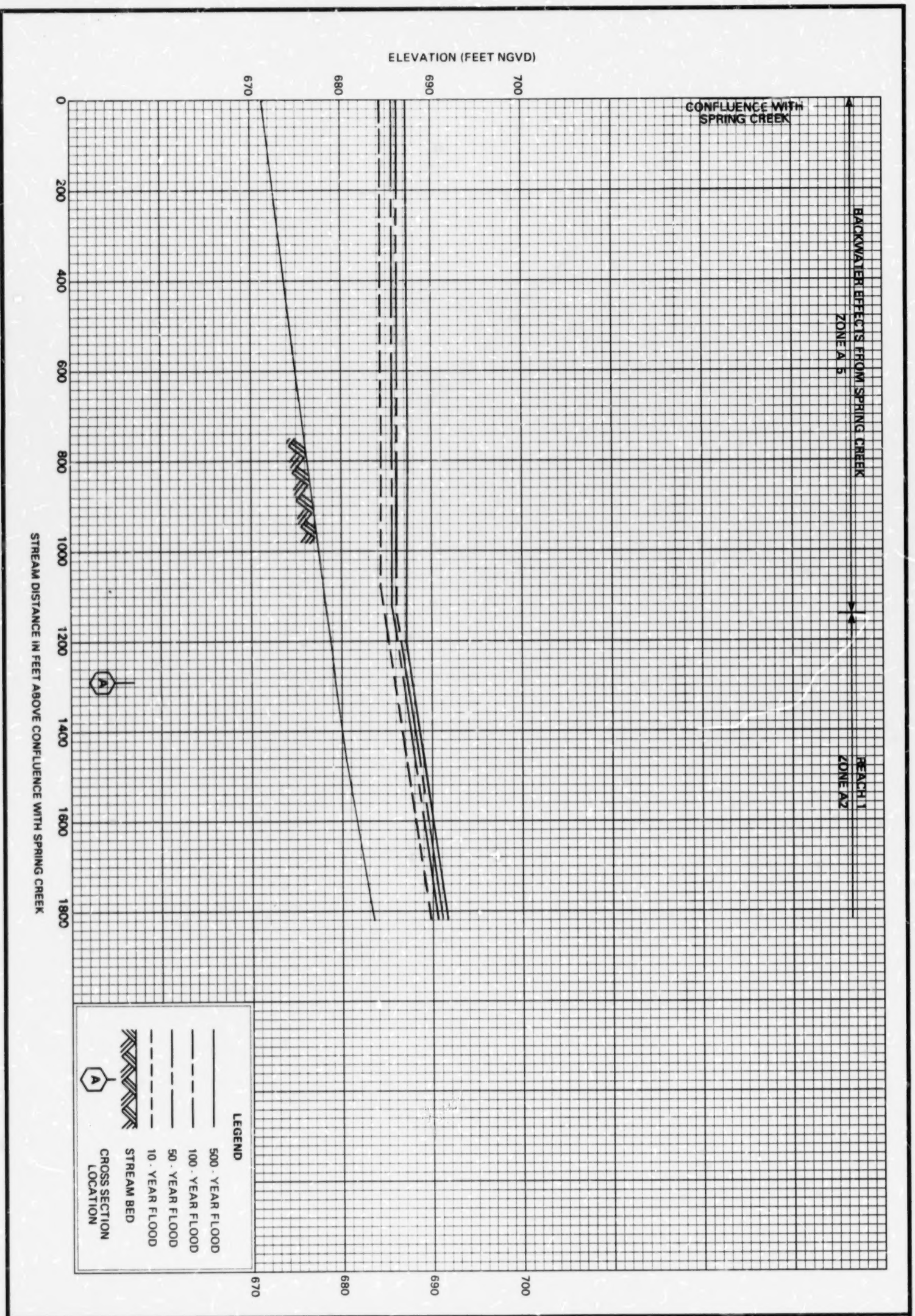


32P	FEDERAL EMERGENCY MANAGEMENT AGENCY **CITY OF PLANO, TX** (COLLIN AND DENTON COS.)	**FLOOD PROFILES** **STREAM 2112**



33P	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PLANO, TX (COLLIN AND DENTON COS.)	FLOOD PROFILES STREAM 21:1

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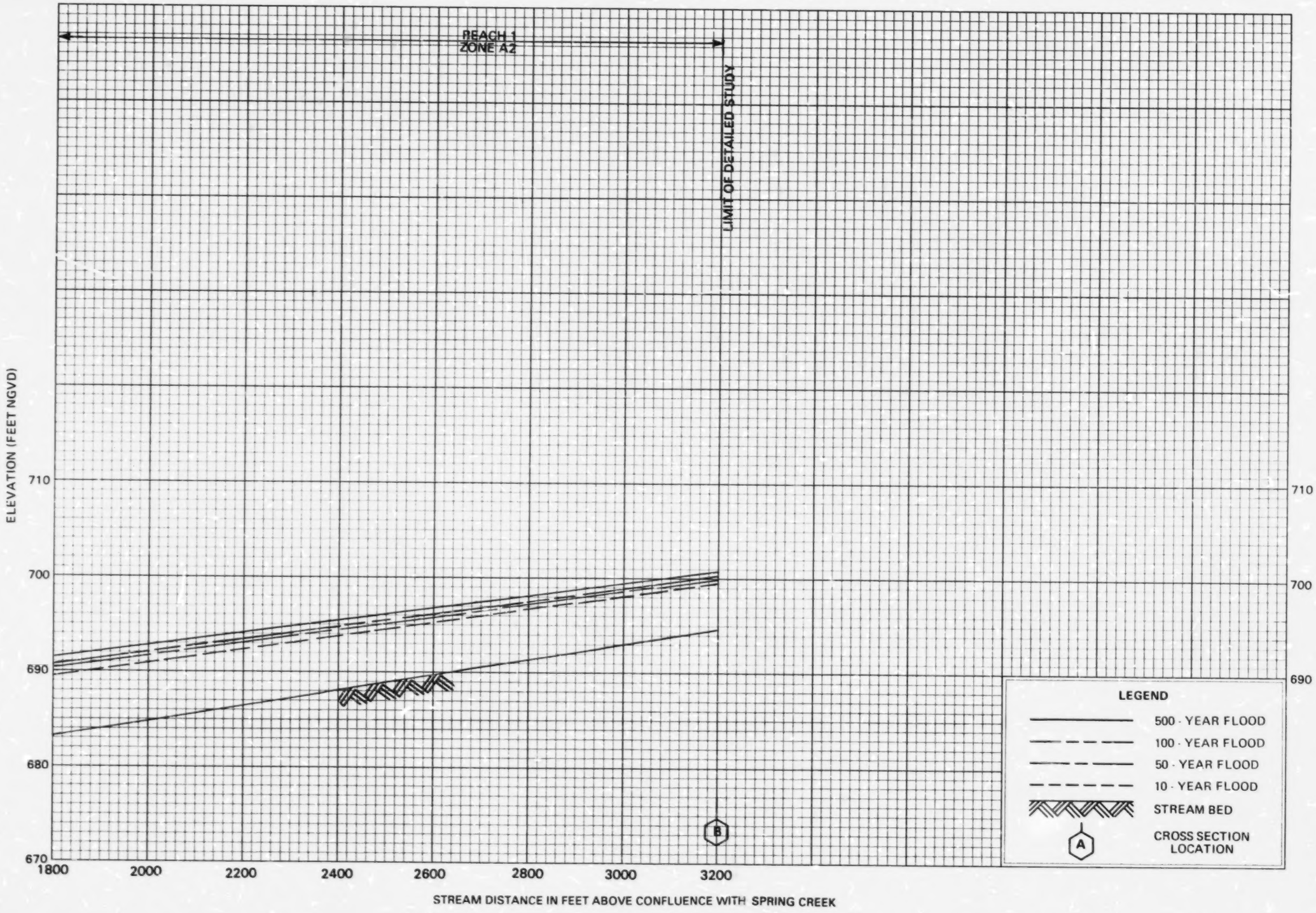

FLOOD PROFILES

STREAM 2111

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

34P

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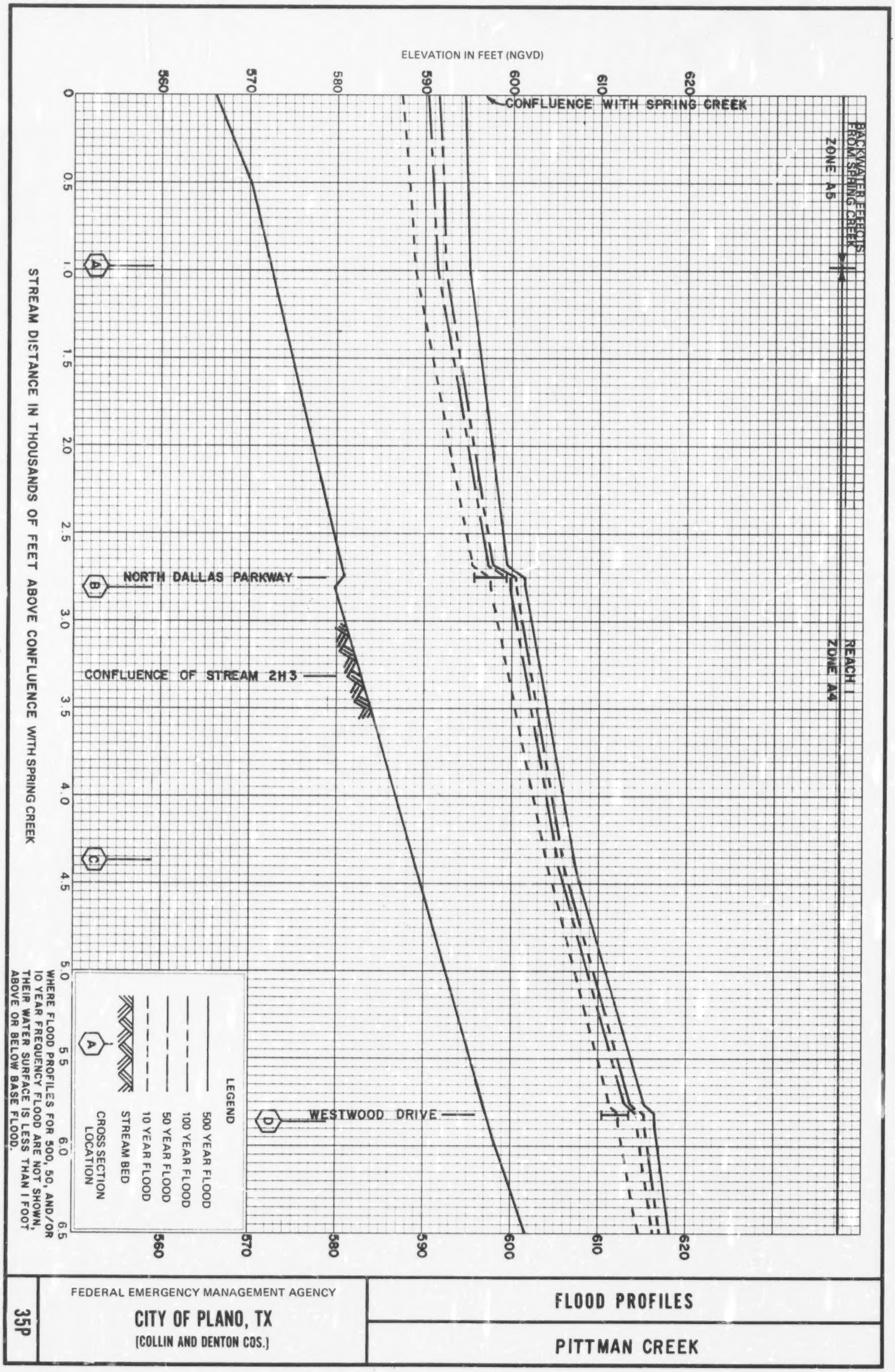


35P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD PROFILES

PITTMAN CREEK

REACH 1
ZONE A4

ELEVATION IN FEET (NGVD)

660
650
640
630
620
610
600

CARMEL DRIVE

WEST 15 STREET (HWY 544)

CUSTER ROAD

PARK BOULEVARD

E F G H I J K L

6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 10.5 11.0 11.5 12.0 12.5 13.0

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH SPRING CREEK

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

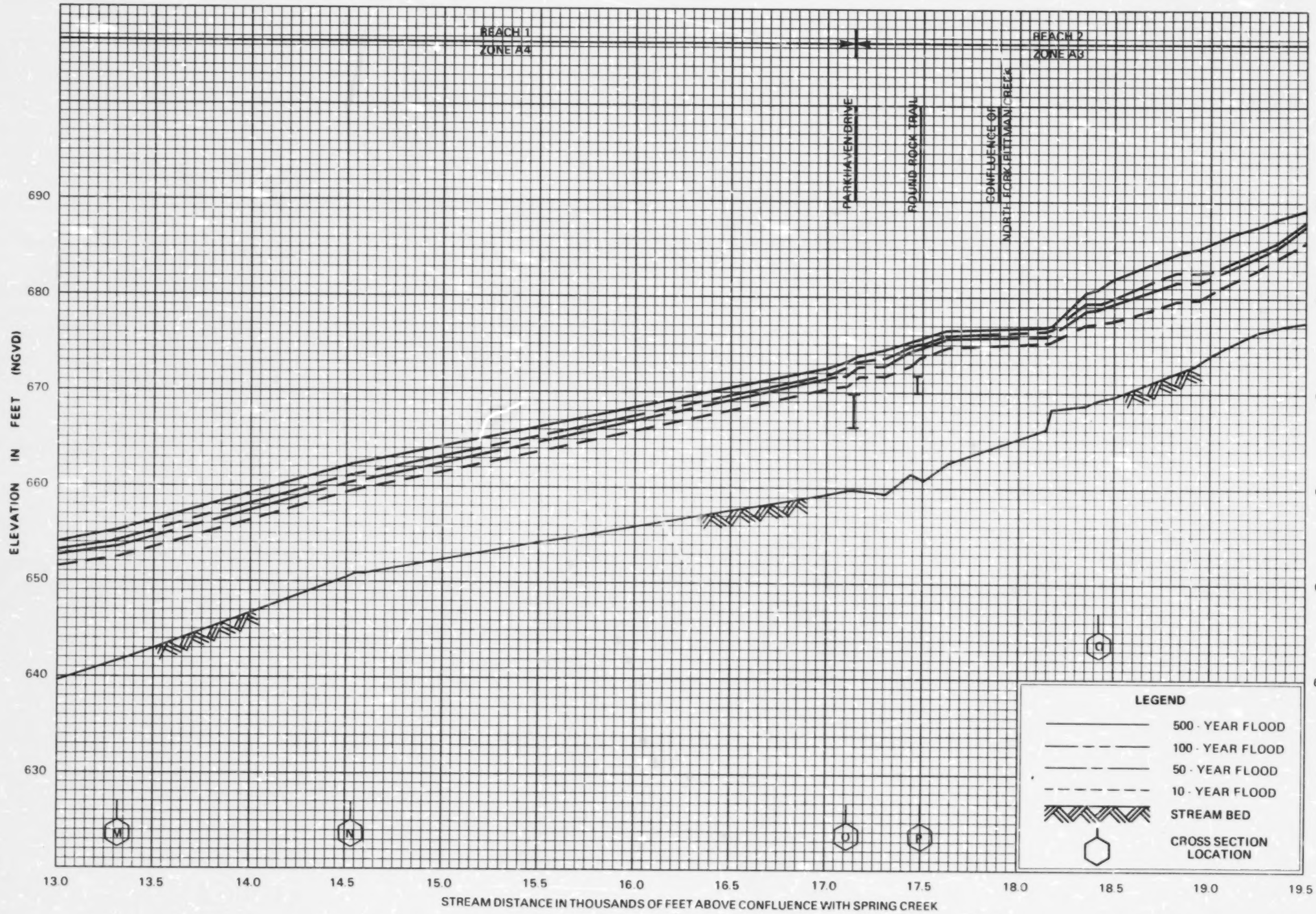
PITTMAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

36P

BEST COPY AVAILABLE



FLOOD PROFILES

PITTMAN CREEK

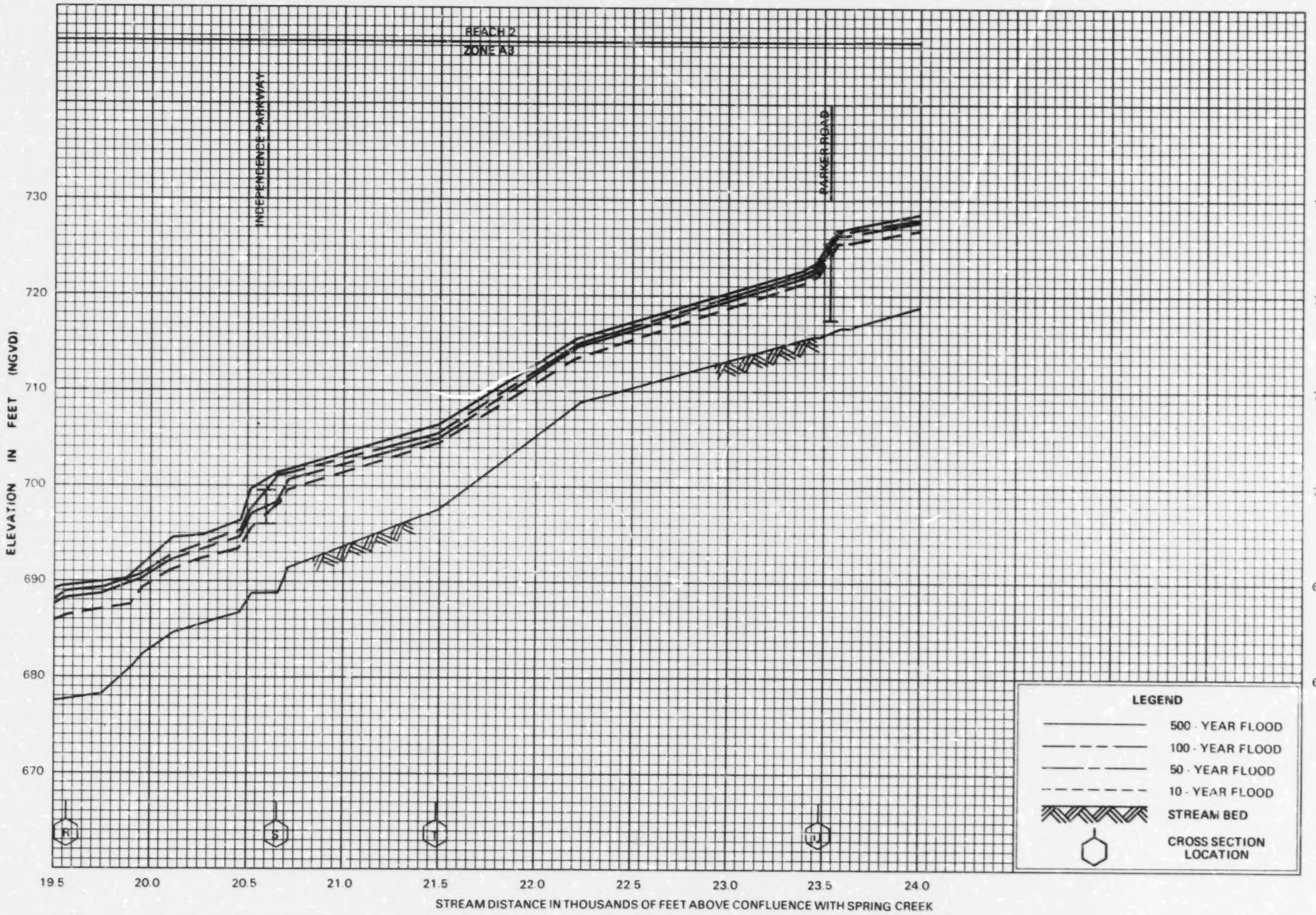
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

37P

BEST COPY AVAILABLE



FLOOD PROFILES

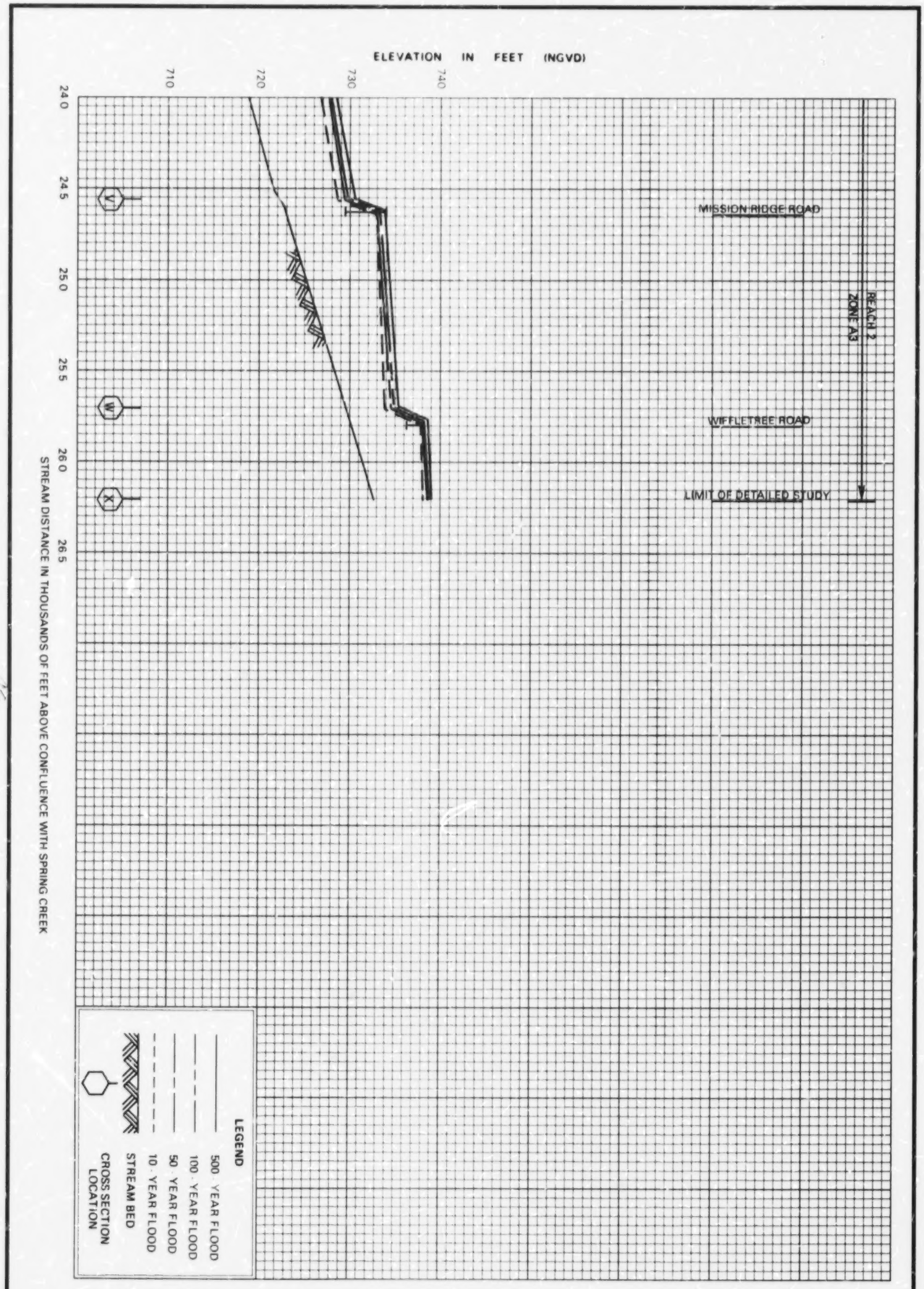
PITTMAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

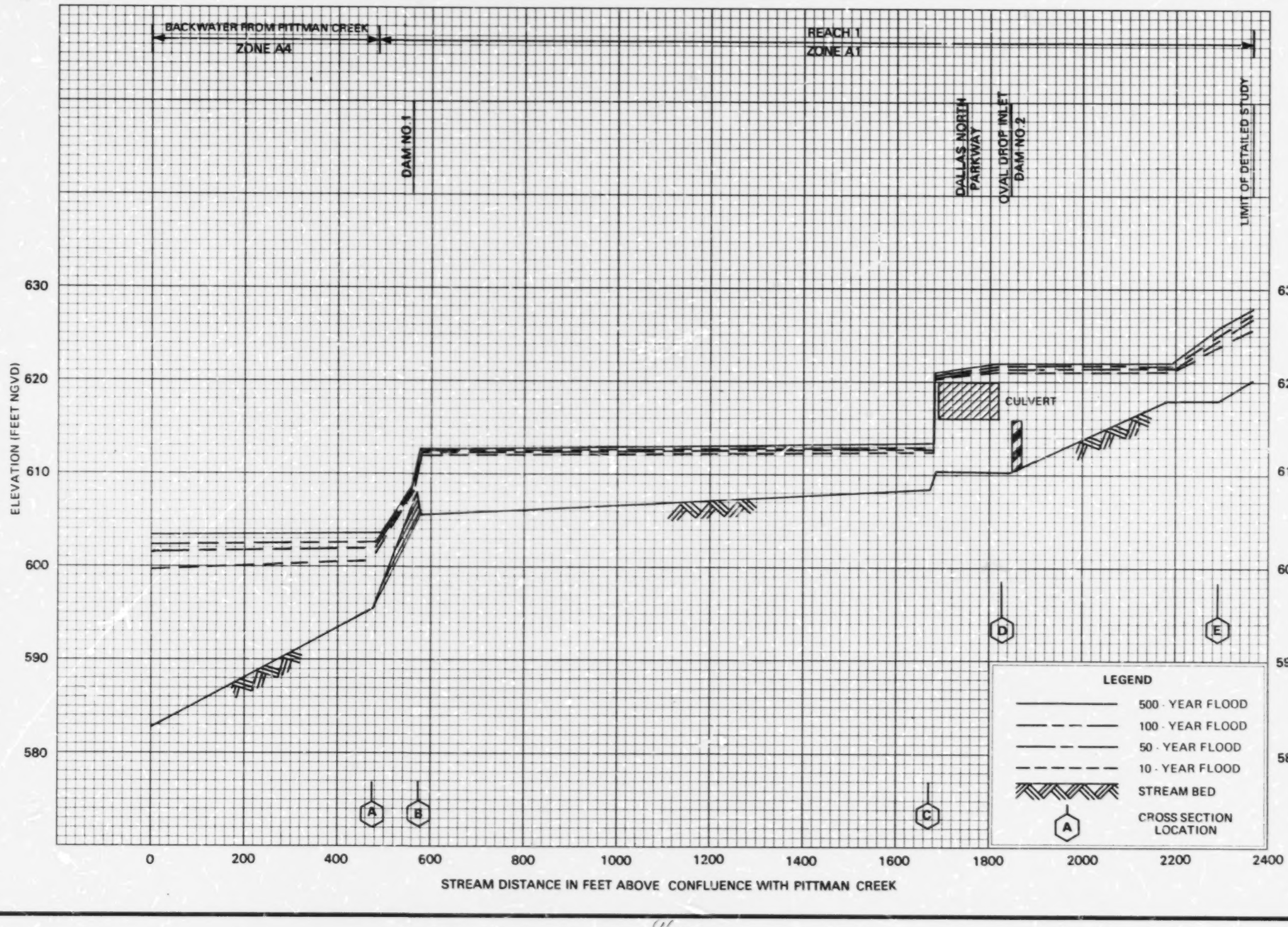
(COLLIN AND DENTON COS.)

38P



39P	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PLANO, TX (COLLIN AND DENTON COS.)	FLOOD PROFILES PITTMAN CREEK

BEST COPY AVAILABLE



FLOOD PROFILES

STREAM 2H3

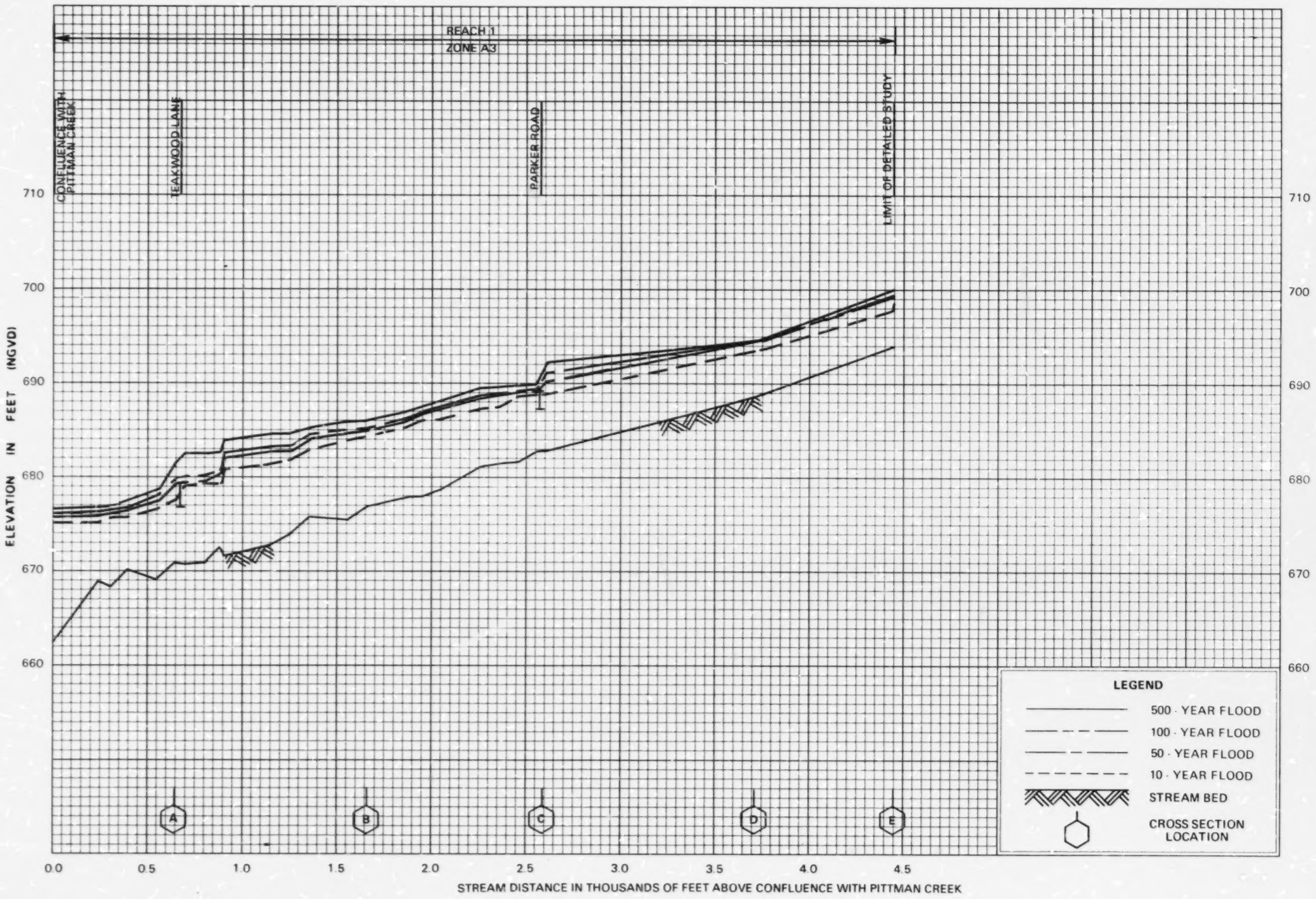
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

40P

BEST COPY AVAILABLE



FLOOD PROFILES

NORTH FORK PITTMAN CREEK

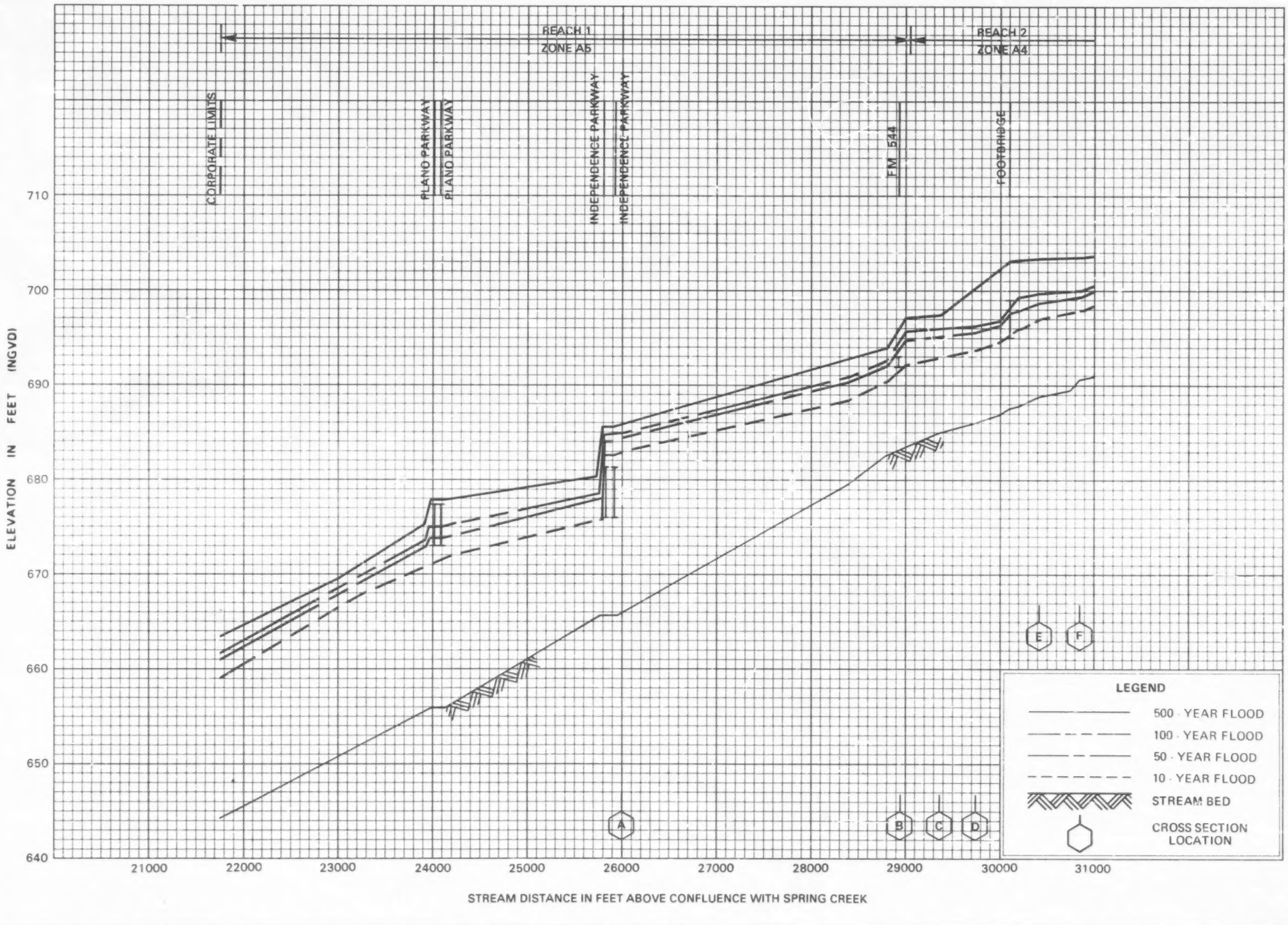
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

41P

BEST COPY AVAILABLE



FLOOD PROFILES

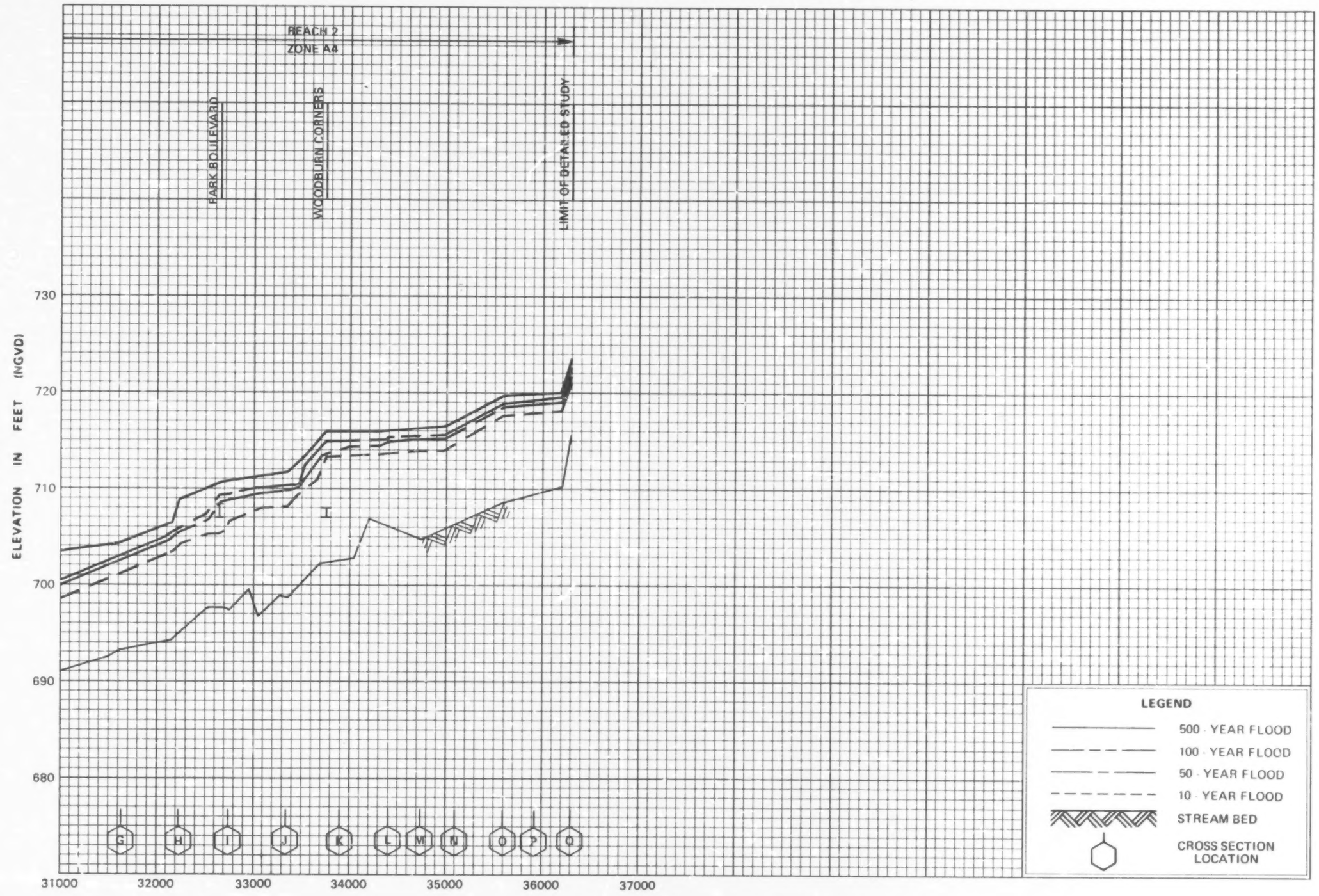
PRAIRIE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

42P

88



FLOOD PROFILES

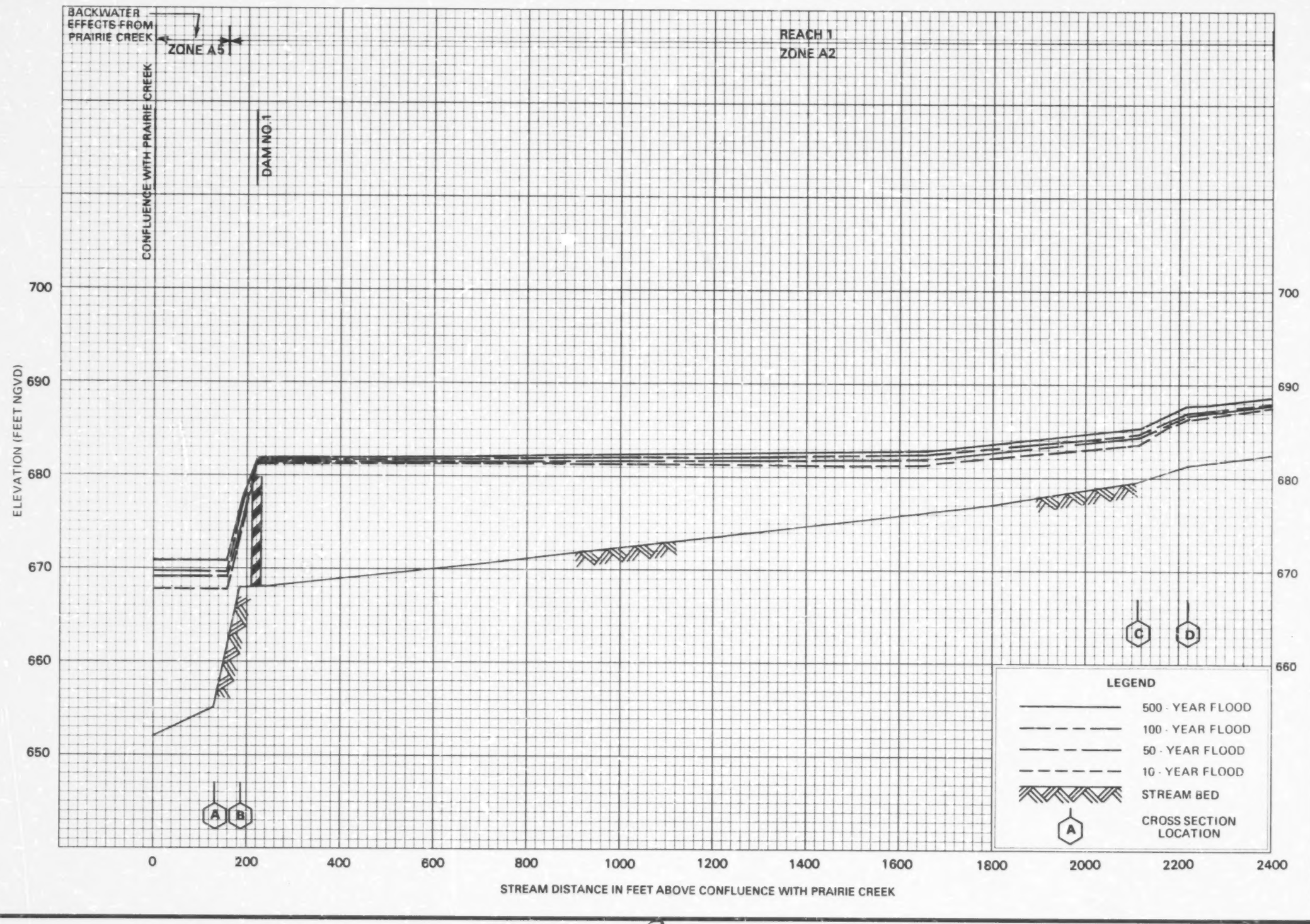
PRAIRIE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

43P



FLOOD PROFILES

STREAM 2L1

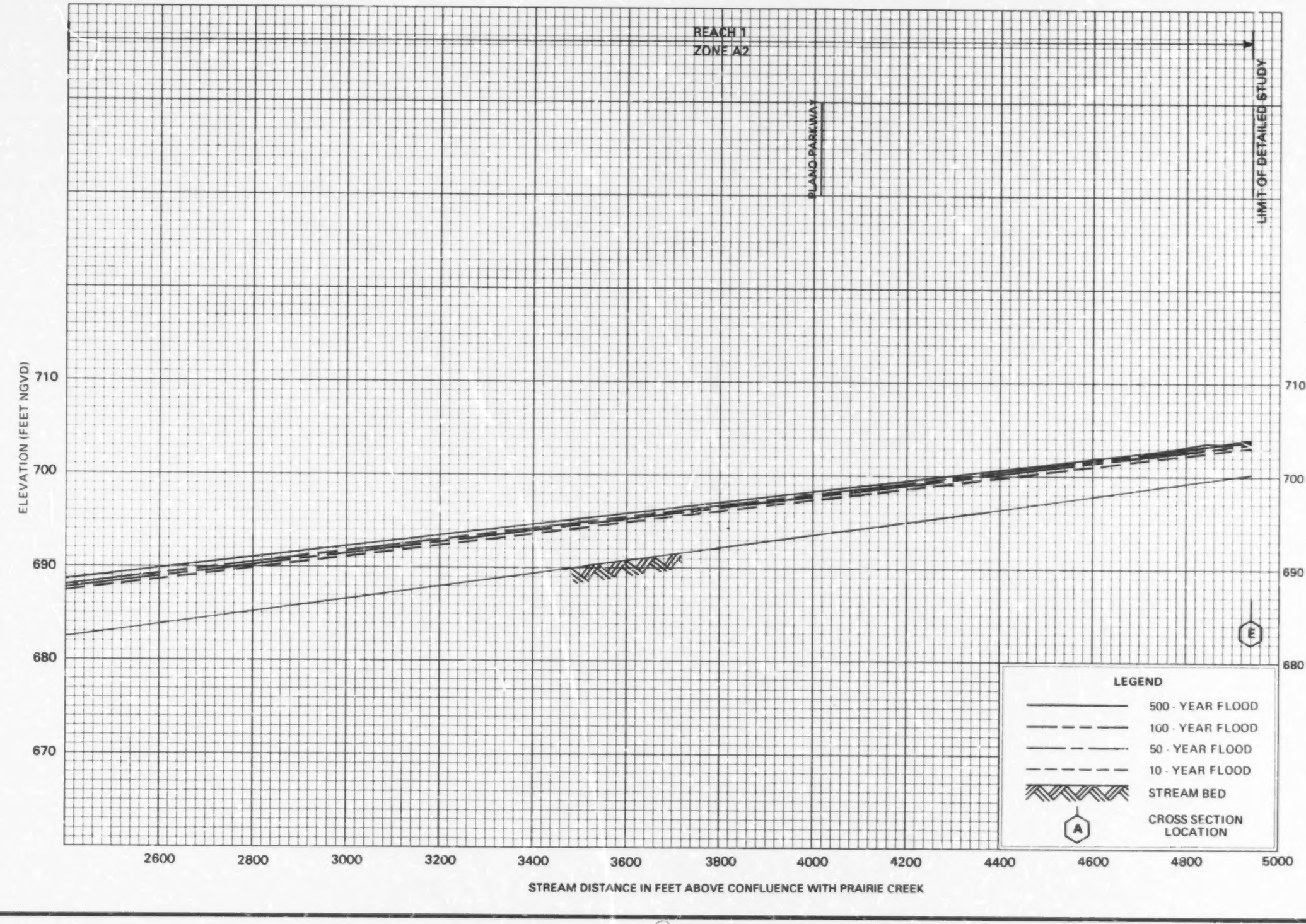
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

44P

BEST COPY AVAILABLE



FLOOD PROFILES

STREAM 2L1

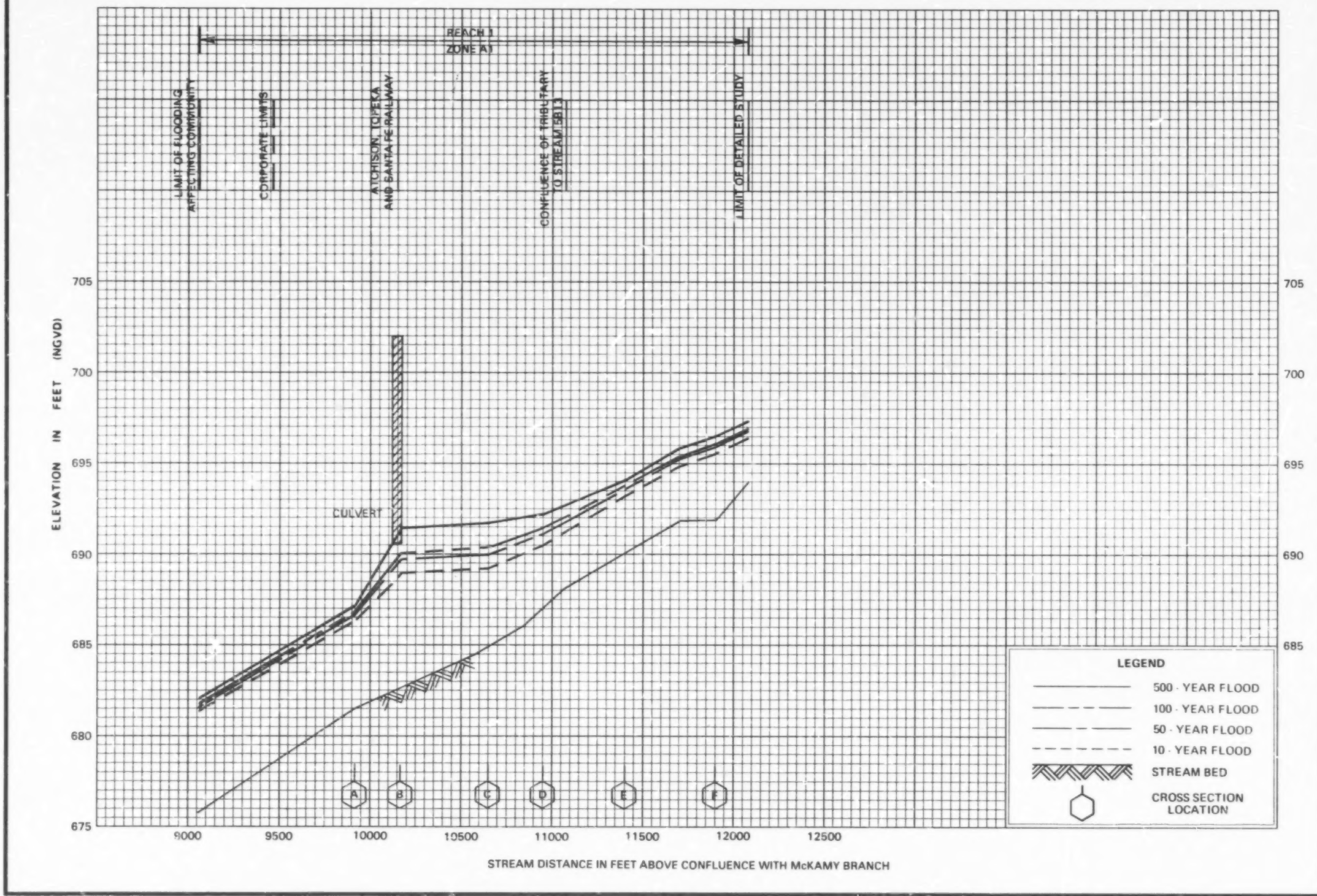
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

45P

BEST COPY AVAILABLE



FLOOD PROFILES

STREAM 5B13

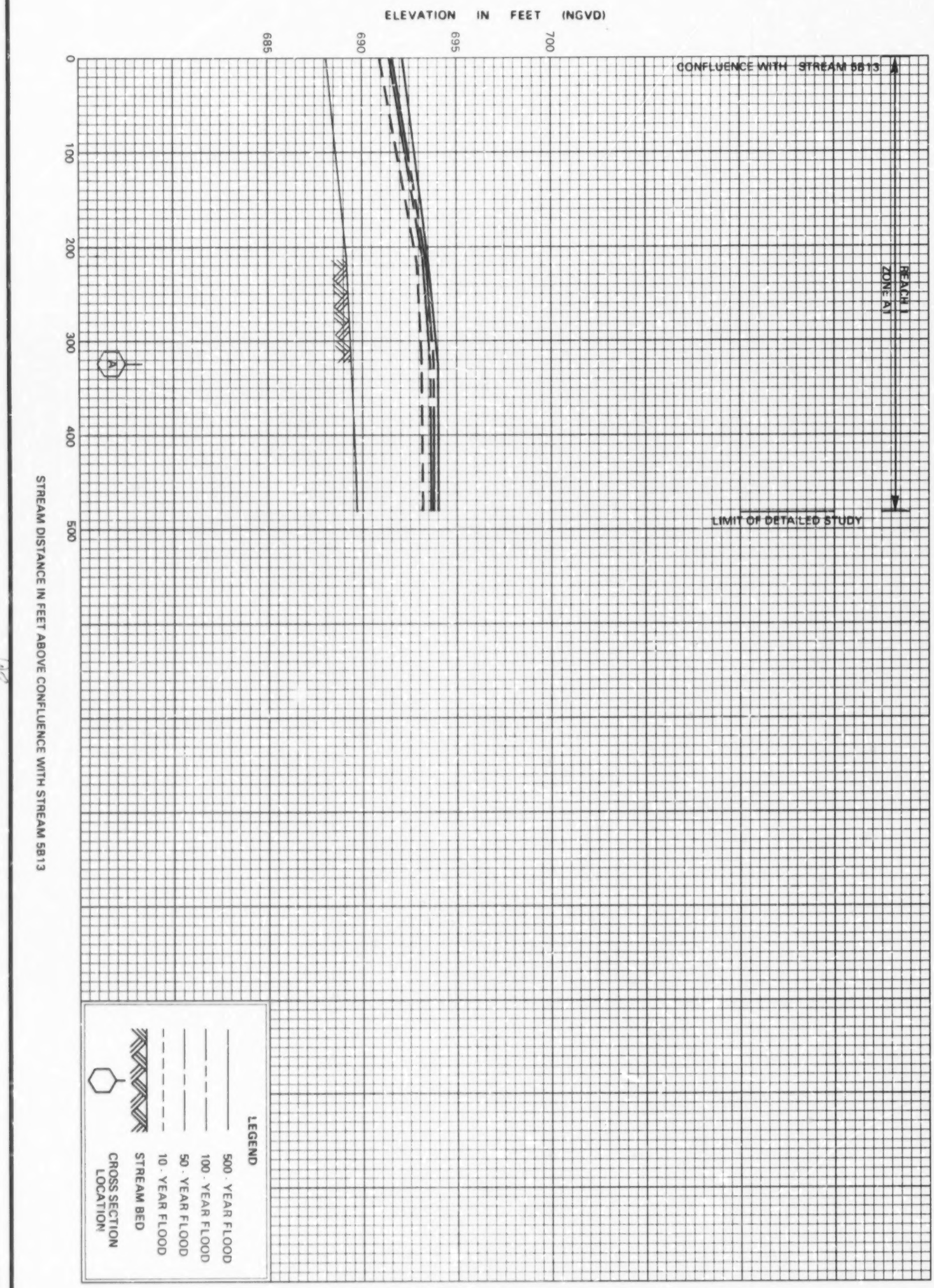
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

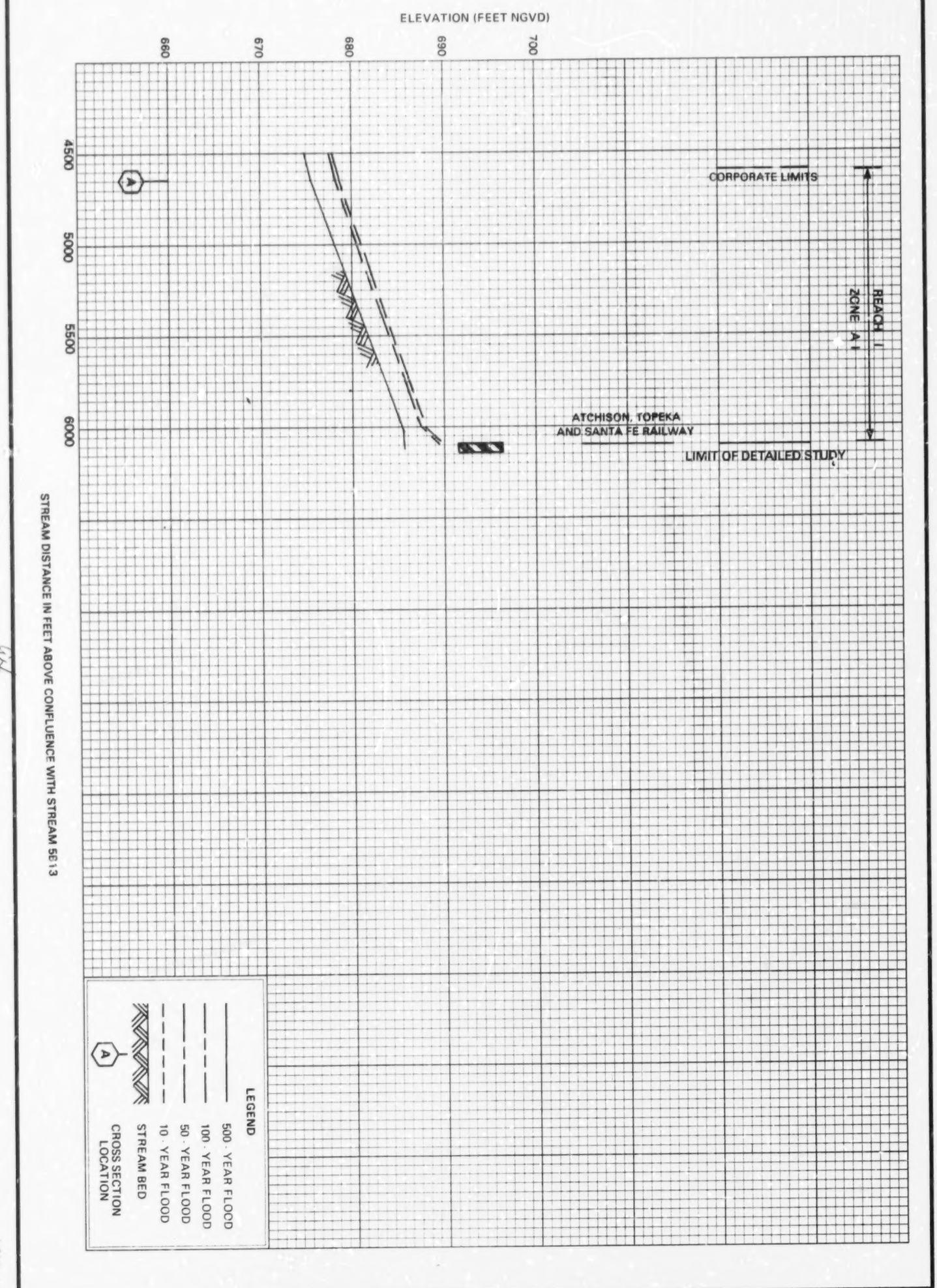
(COLLIN AND DENTON COS.)

46P

BEST COPY AVAILABLE



47P	FEDERAL EMERGENCY MANAGEMENT AGENCY CITY OF PLANO, TX (COLLIN AND DENTON COS.)	FLOOD PROFILES TRIBUTARY TO STREAM 5B13



48P

FEDERAL EMERGENCY MANAGEMENT AGENCY

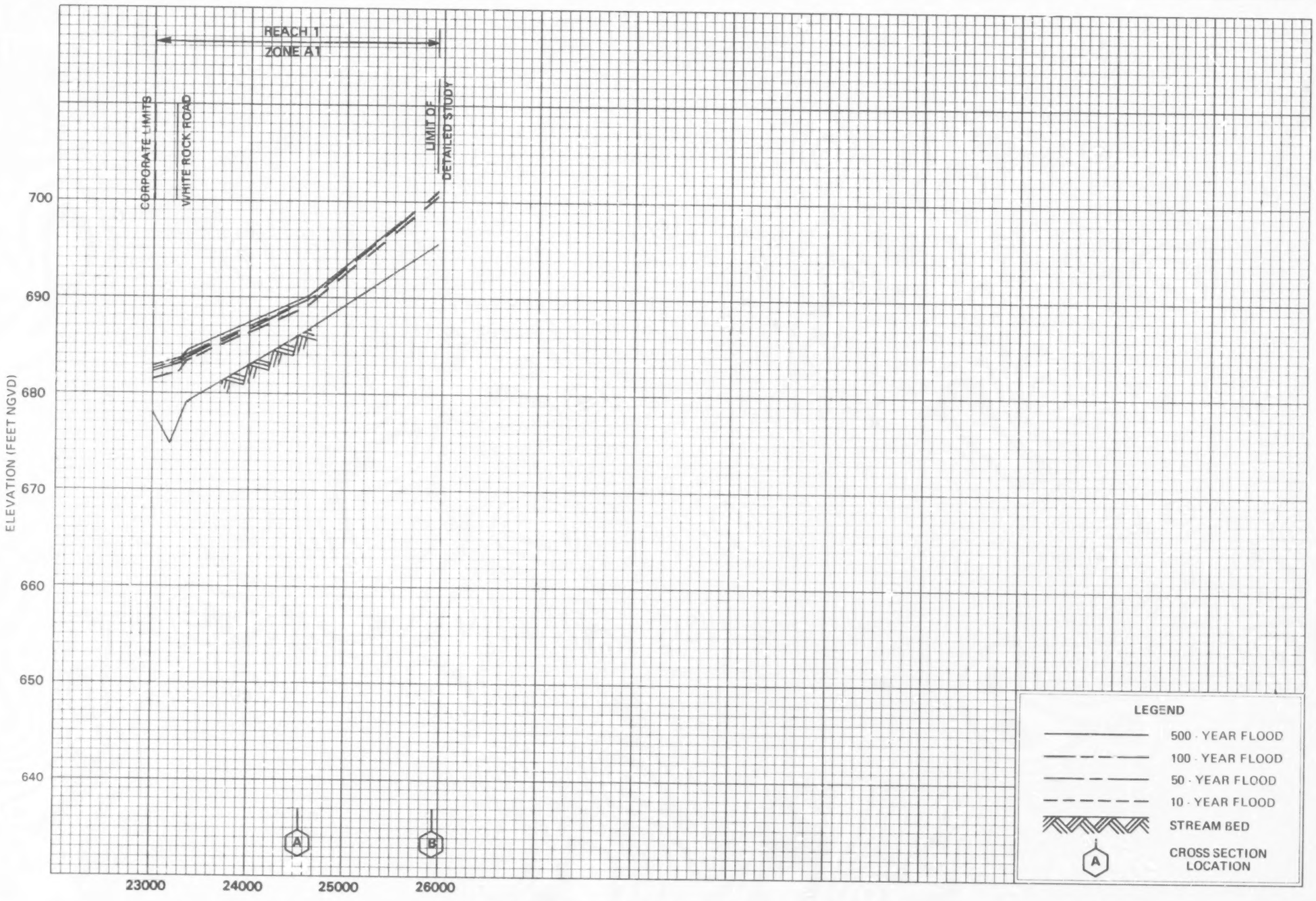
CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD PROFILES

STREAM 5B14

BEST COPY AVAILABLE



FLOOD PROFILES

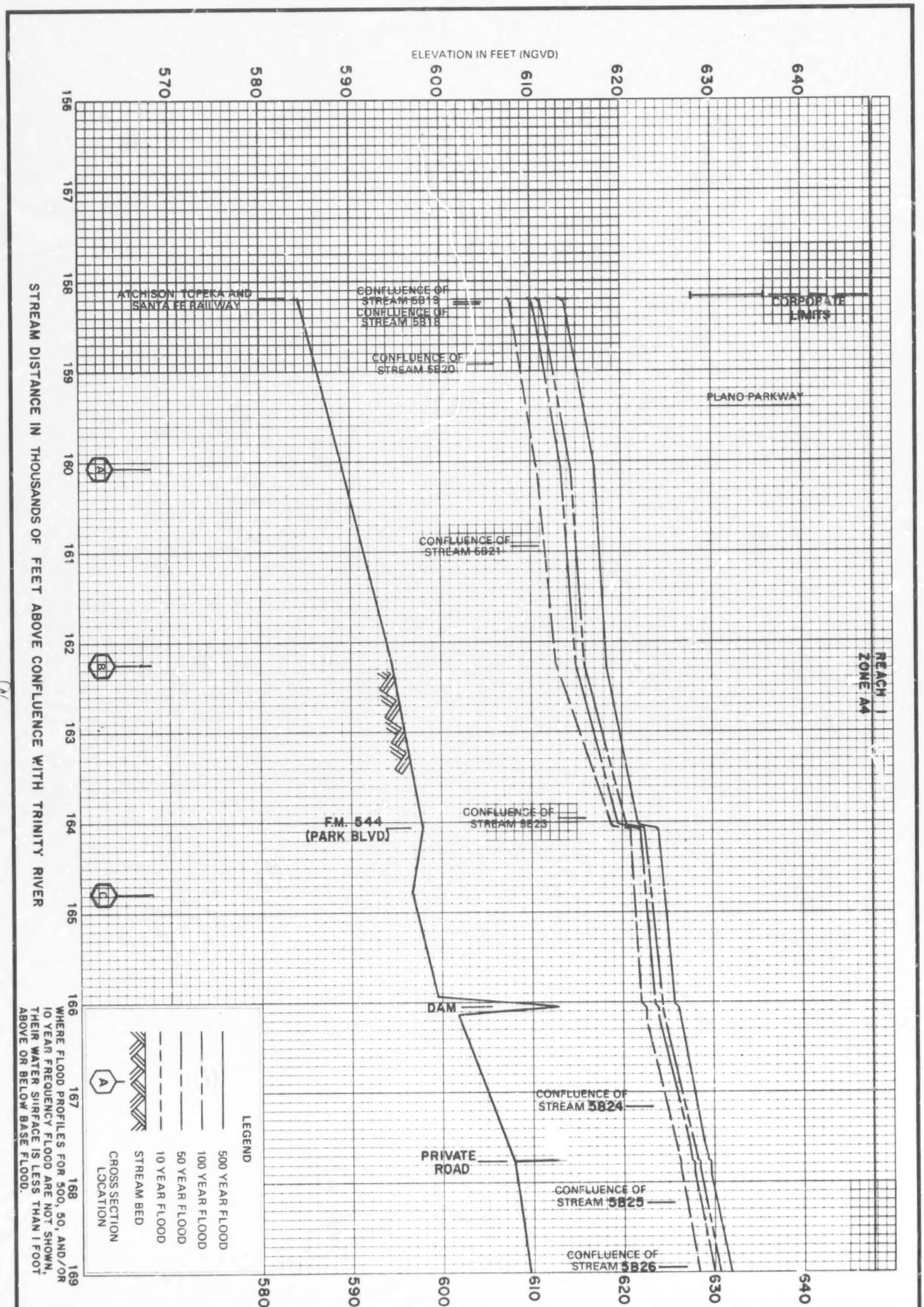
MCKAMY BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

49P

BEST COPY AVAILABLE



50P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

FLOOD PROFILES

WHITE ROCK CREEK

REACH 1
ZONE A4

ELEVATION IN FEET (NGVD)

670
660
650
640
630
620
610
600

CORPORATE LIMITS

UNINCORPORATED AREAS OF COLLIN CO.
(Area Not Included)

EXTRATERRITORIAL JURISDICTION BOUNDARY

CONFLUENCE OF STREAM 5827

CONFLUENCE OF STREAM 5829

CONFLUENCE OF STREAM 5830

CONFLUENCE OF STREAM 5832

CONFLUENCE OF STREAM 5831

YEARLY ROAD

THOMPSON ROAD

D E F G

169 170 171 172 173 174 175 176 177 178 179 180 181 182

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH TRINITY RIVER

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- (A) CROSS SECTION LOCATION

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

WHITE ROCK CREEK

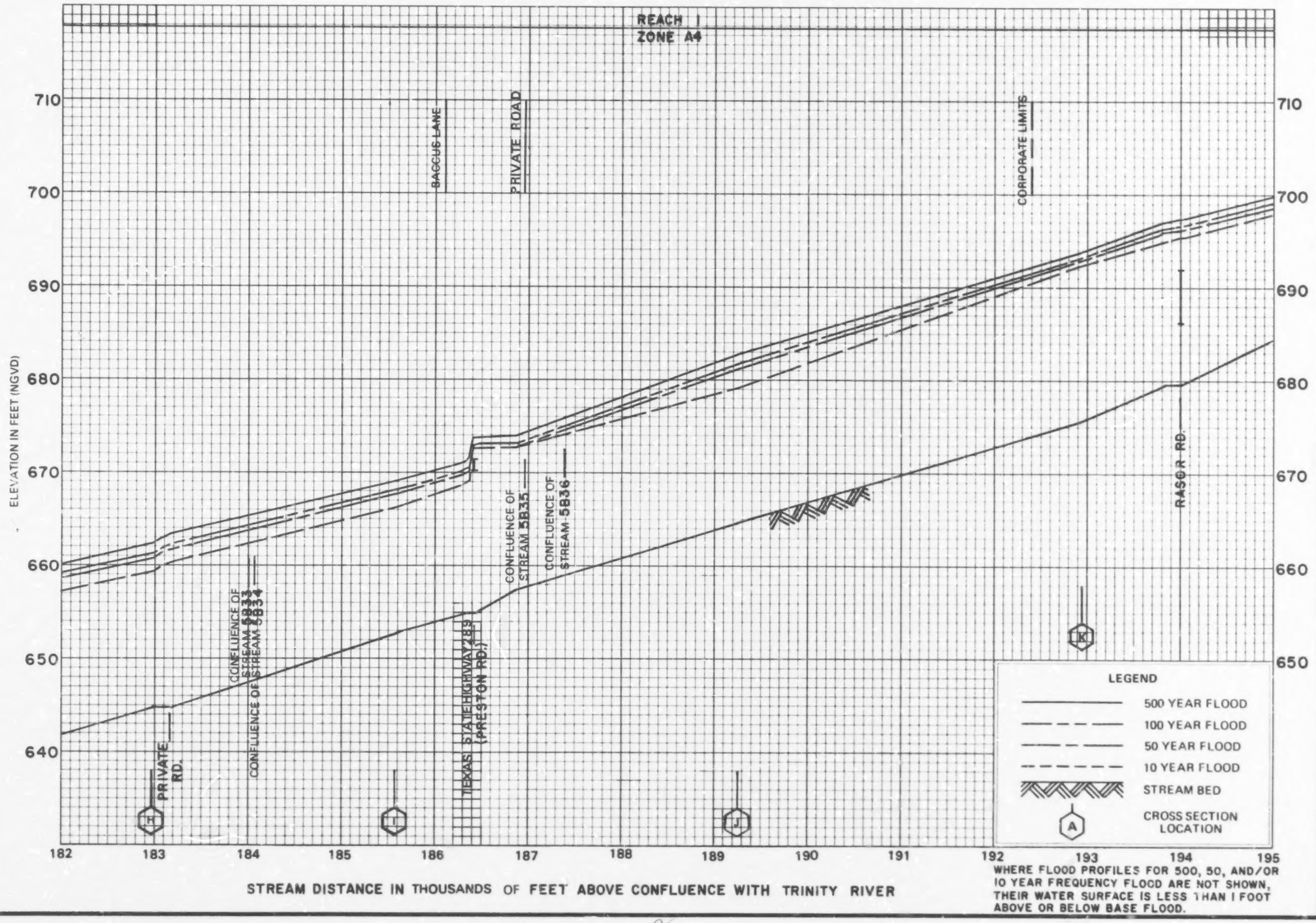
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

51P

BEST COPY AVAILABLE

REACH 1
ZONE A4



WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

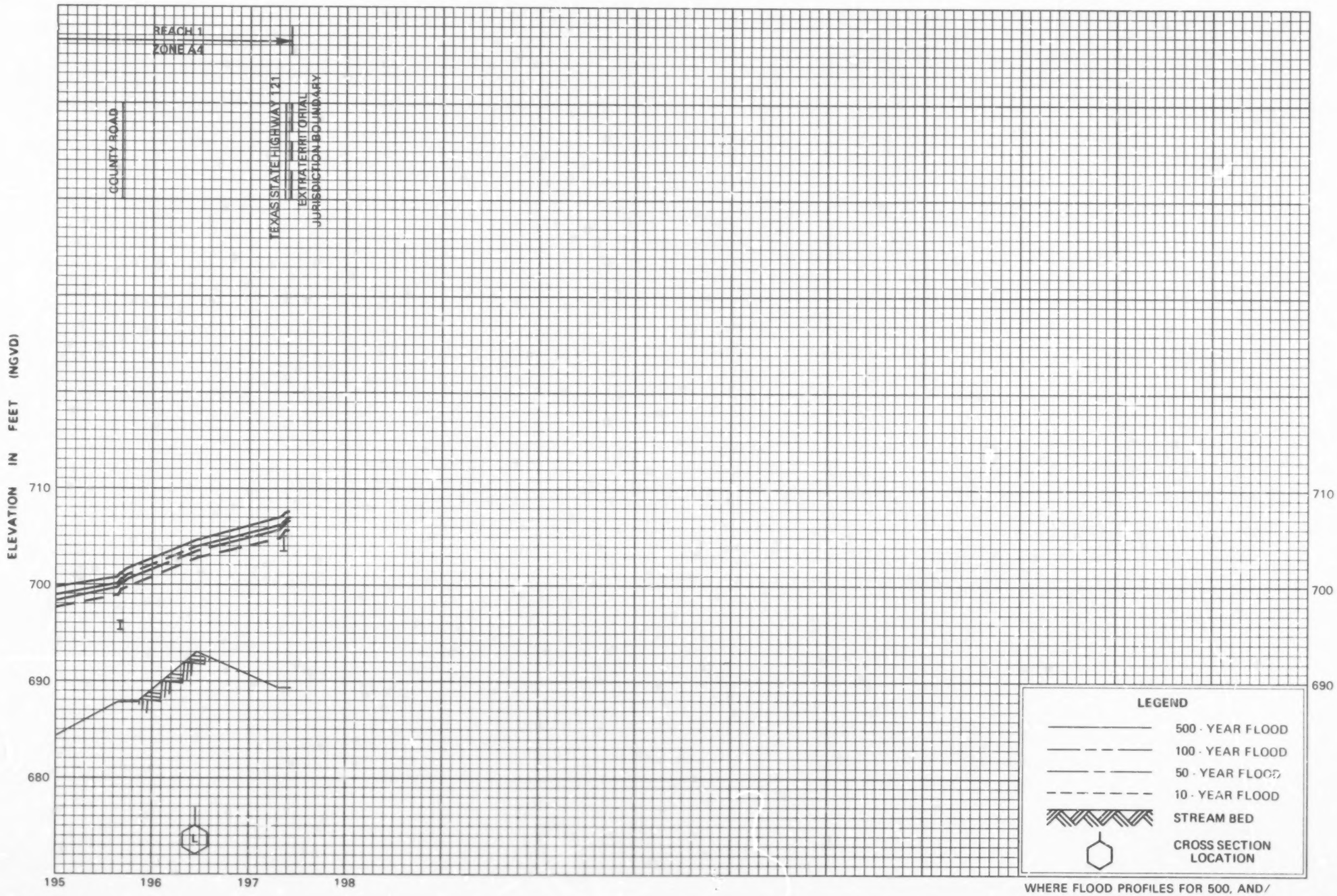
WHITE ROCK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

52P

BEST COPY AVAILABLE



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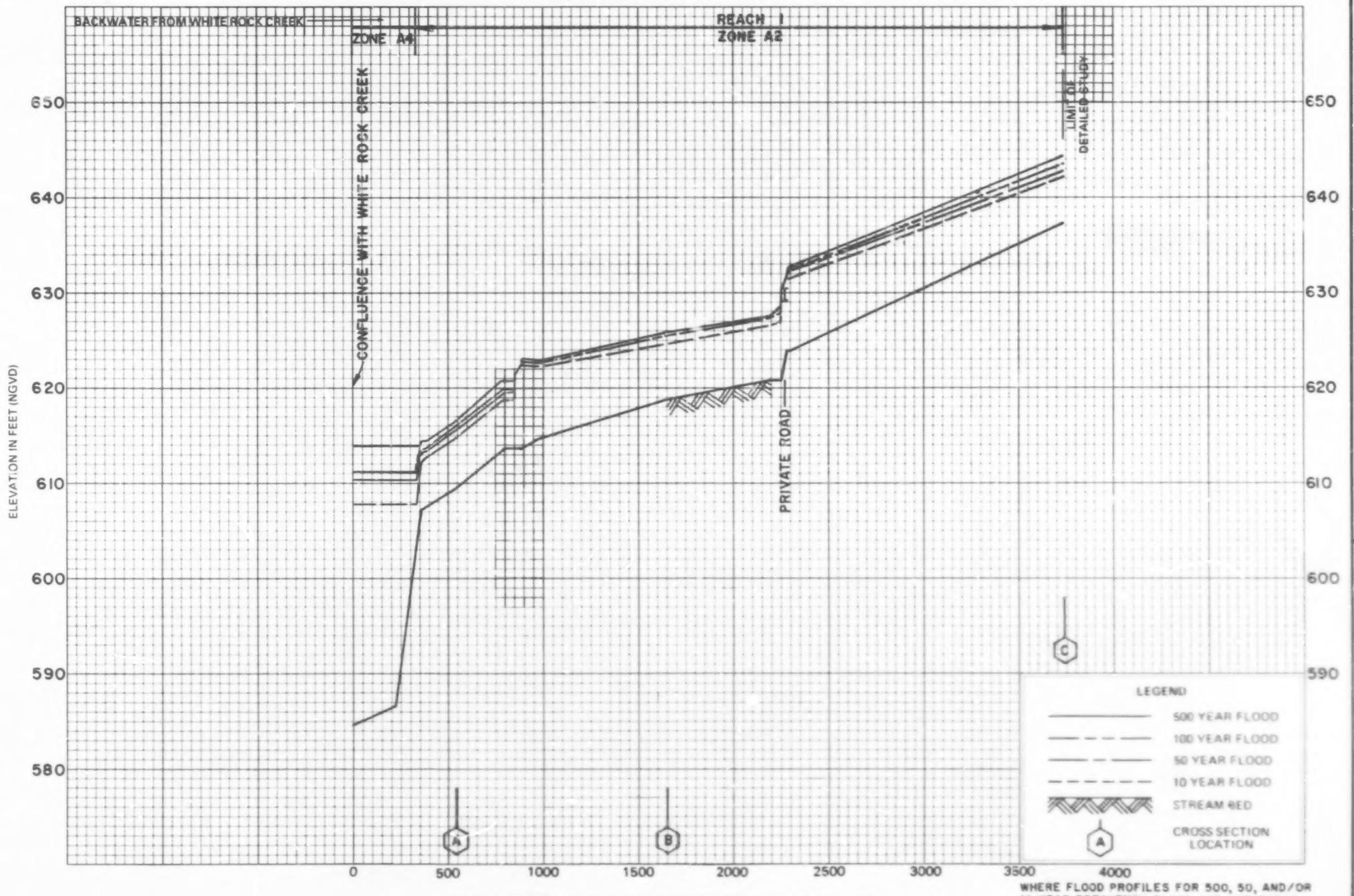

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B18

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

54P

100

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BACKWATER FROM WHITE ROCK CREEK
ZONE A4

REACH 1
ZONE A1

CONFLUENCE WITH WHITE ROCK CREEK

OFF-CHANNEL STOCK POND IN THIS AREA

DALLAS PARKWAY

LIMIT OF DETAILED STUDY

PLANO PARKWAY

ELEVATION IN FEET (NGVD)

660
650
640
630
620
610
600
590

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WHITE ROCK CREEK

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

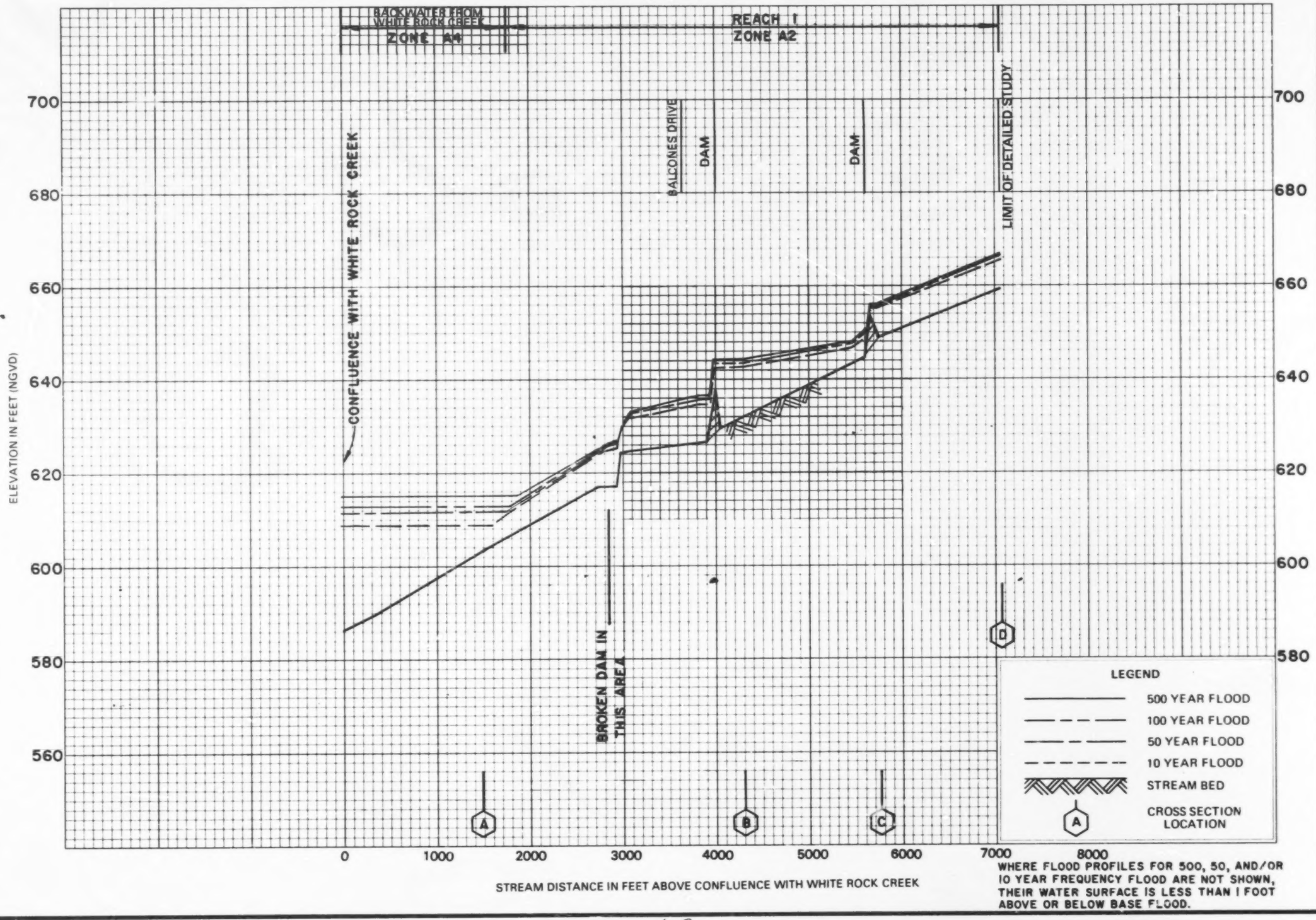
STREAM 5B19

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

55P

BEST COPY AVAILABLE



WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

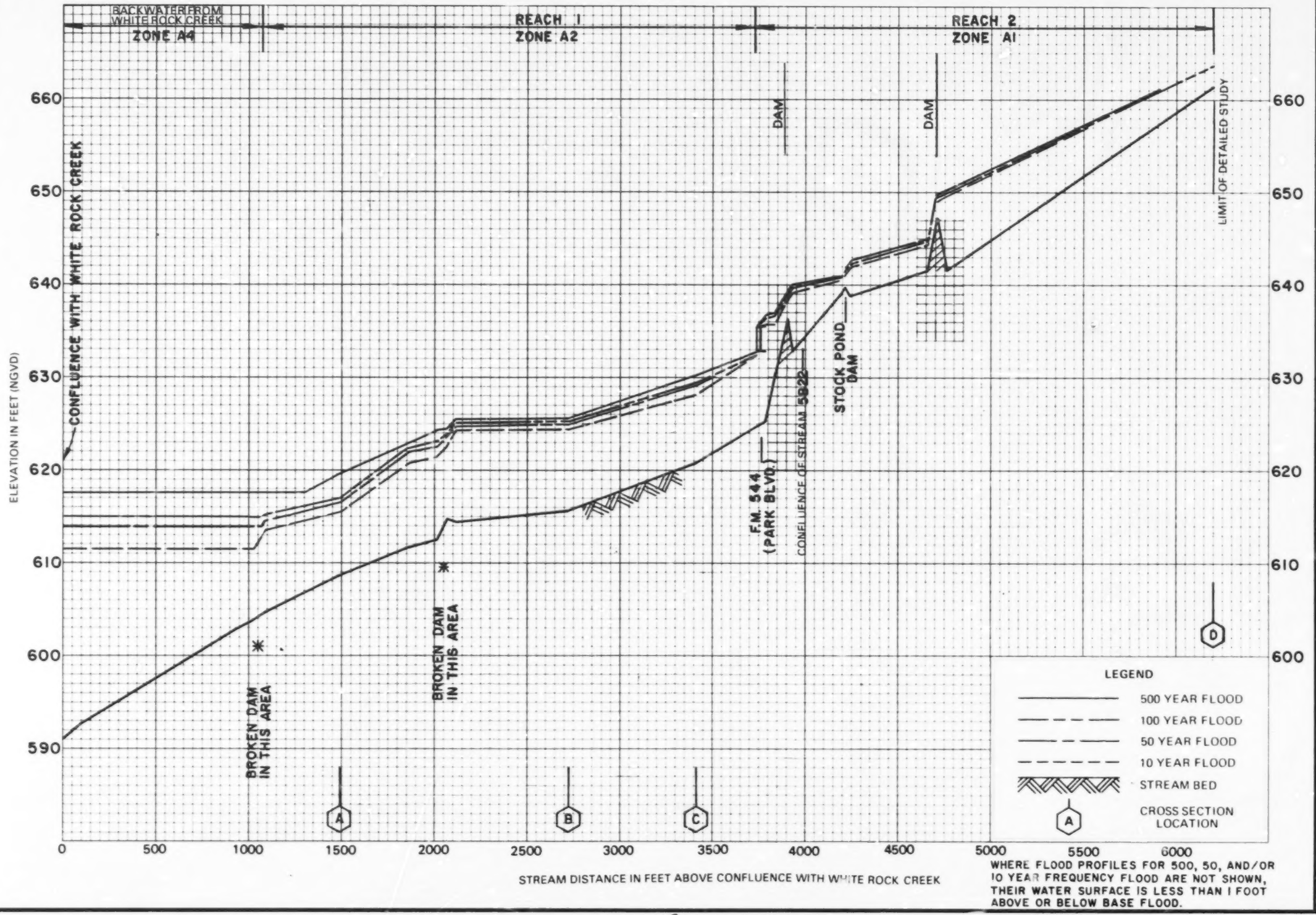
STREAM 5B20

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

56P

BEST COPY AVAILABLE



FLOOD PROFILES

STREAM 5B21

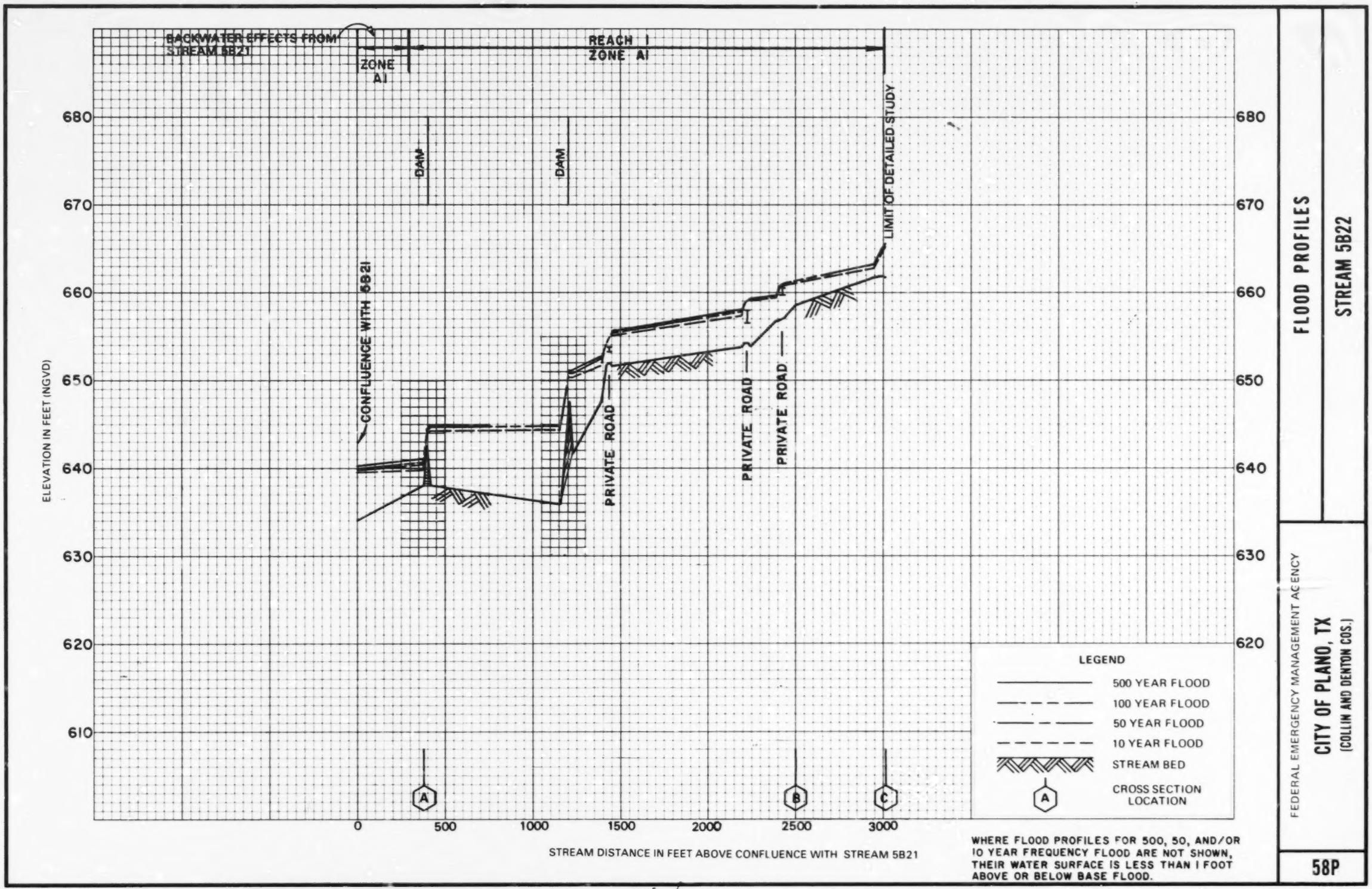
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

57P

BEST COPY AVAILABLE



WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B22

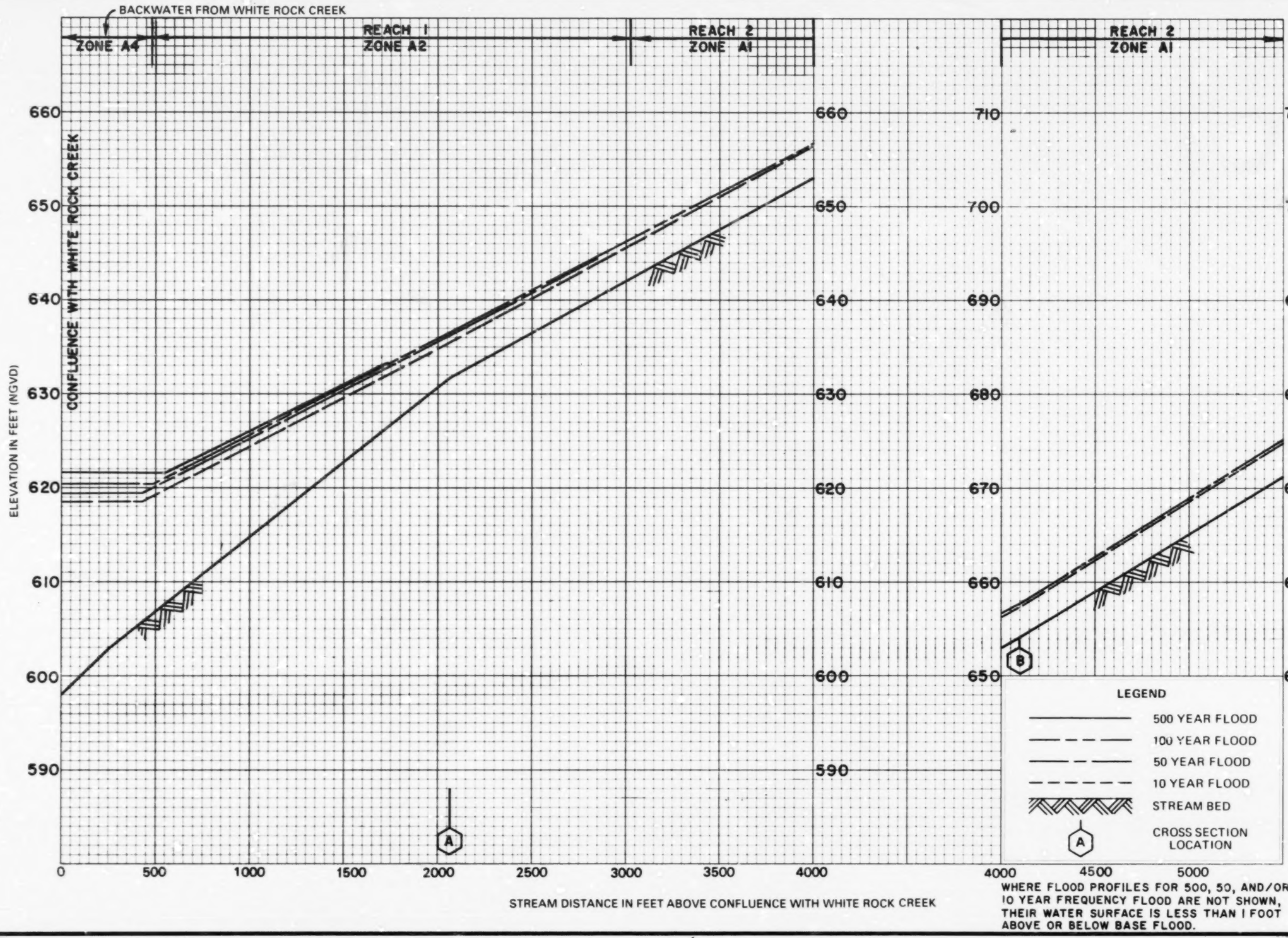
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

58P

BEST COPY AVAILABLE



FLOOD PROFILES

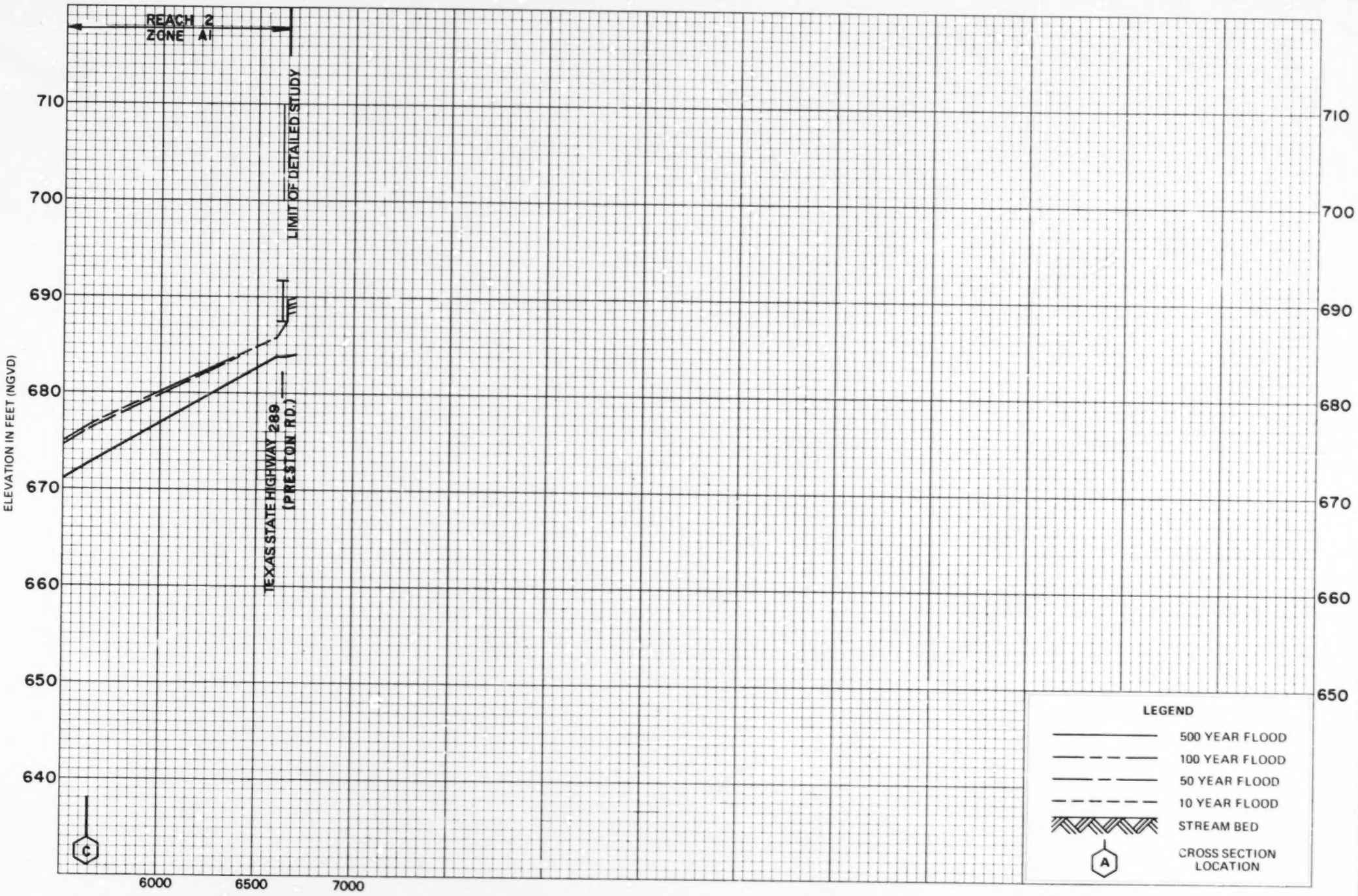
STREAM 5B23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

59P

BEST COPY AVAILABLE



STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WHITE ROCK CREEK

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

60P

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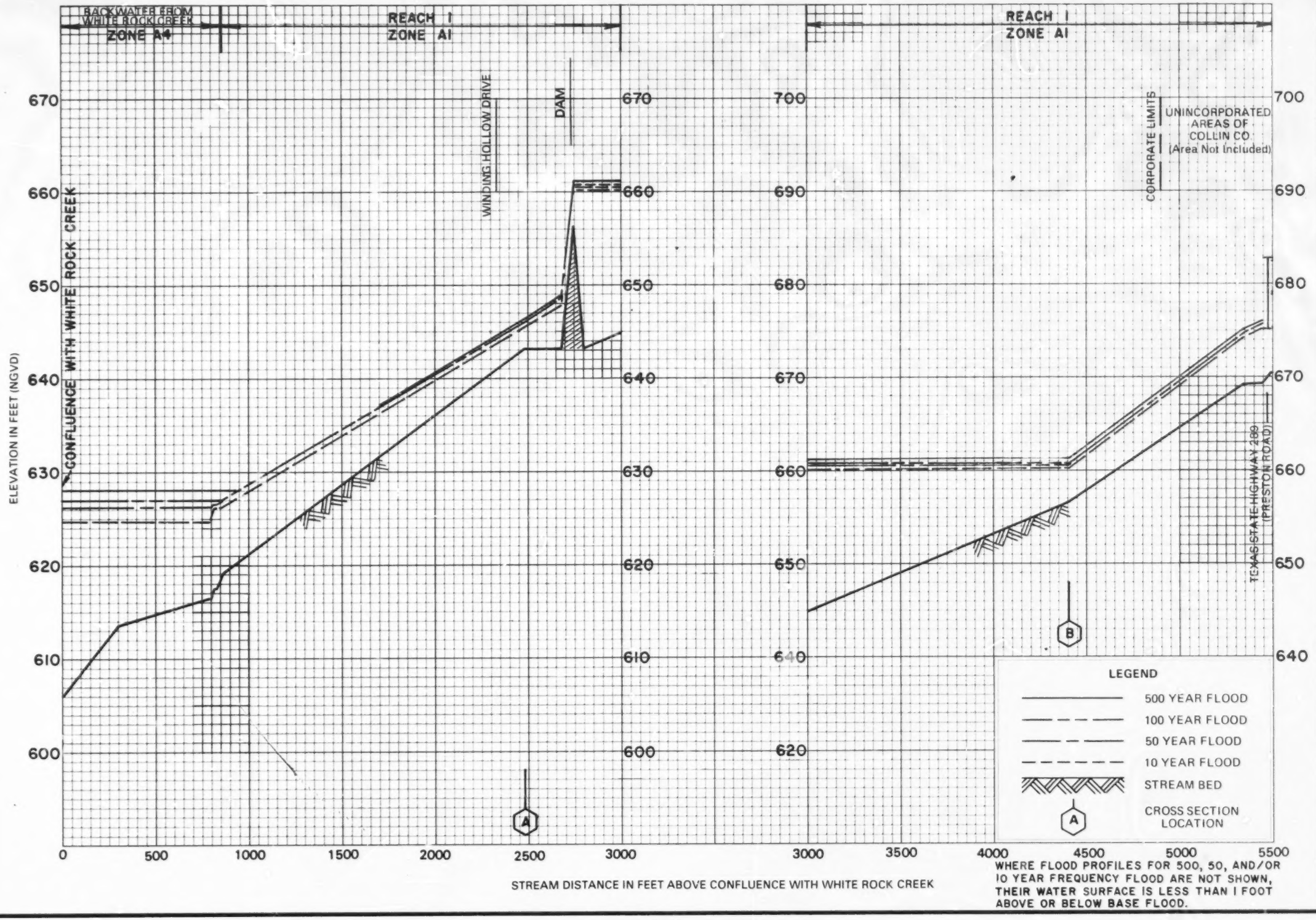

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

61P

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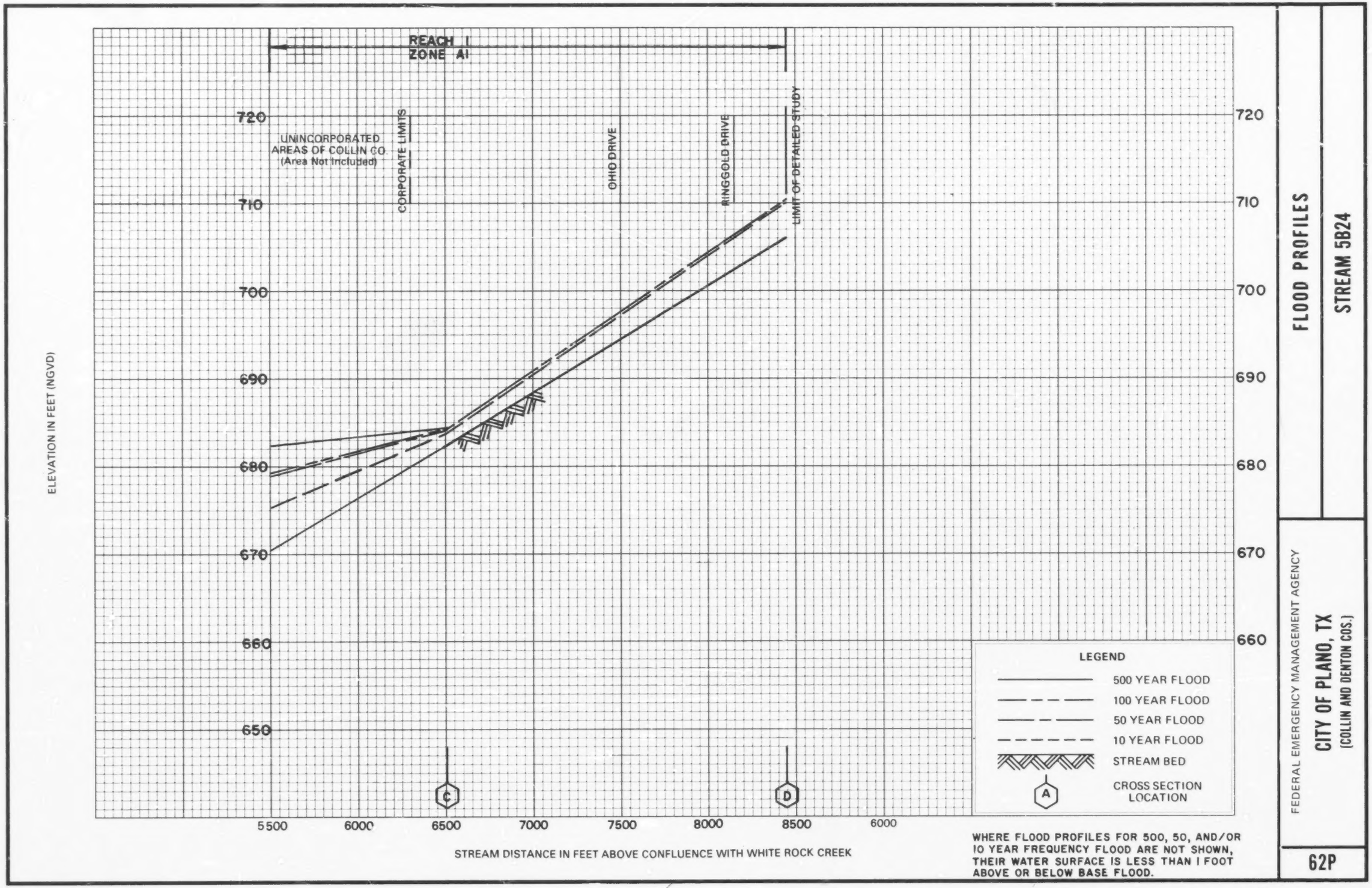


WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

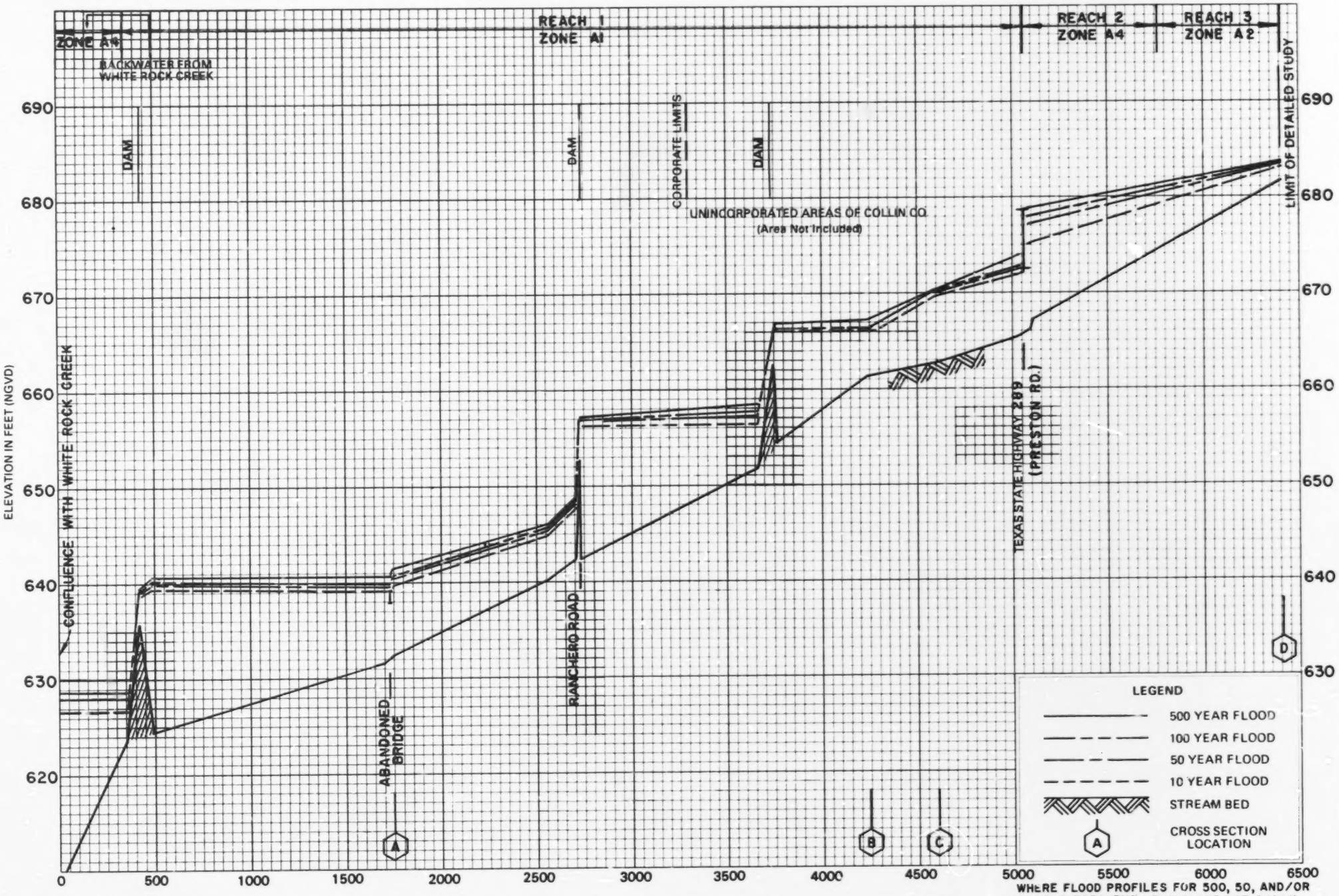
STREAM 5B24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

62P

BEST COPY AVAILABLE



WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B25

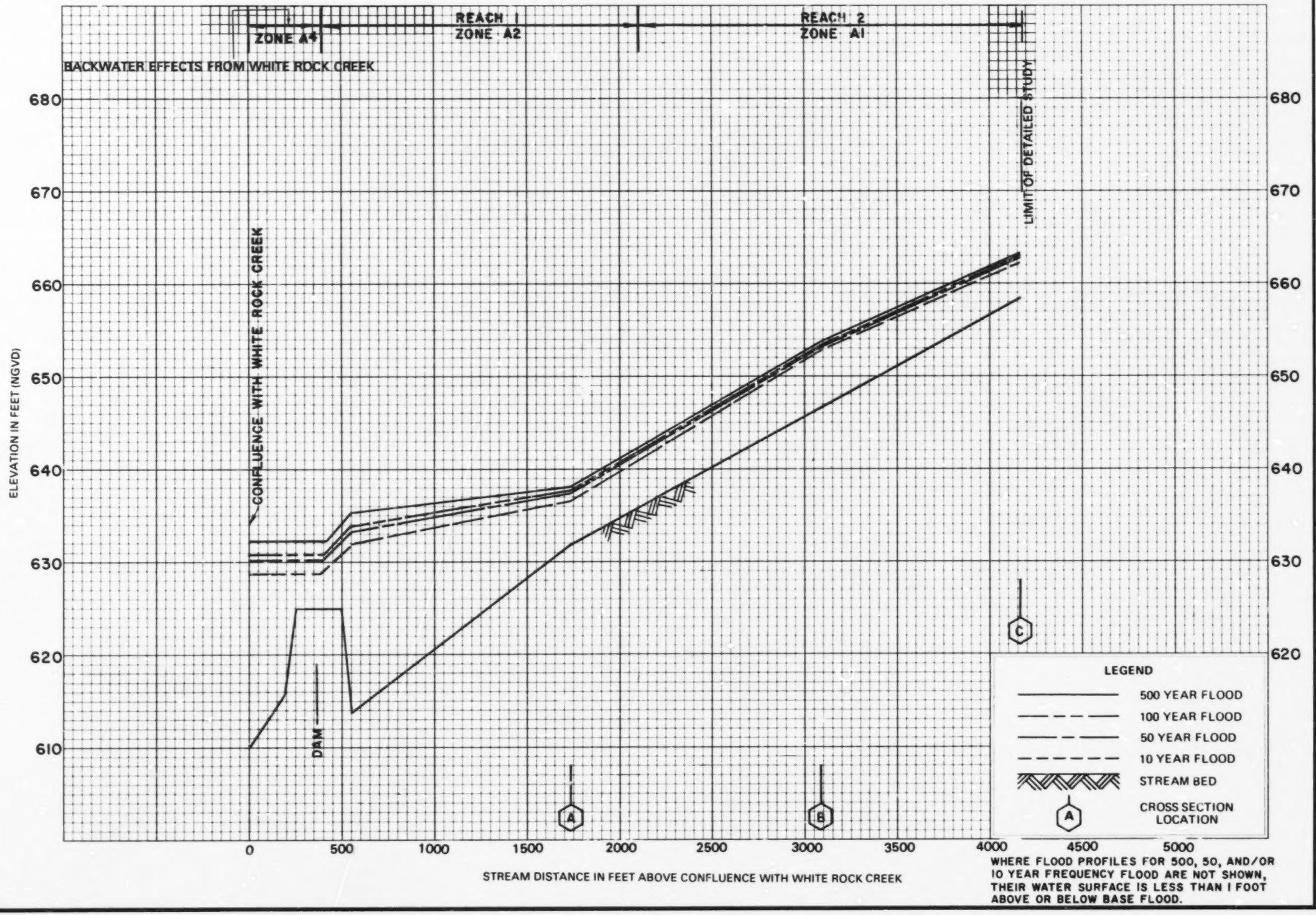
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

63P

BEST COPY AVAILABLE



WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

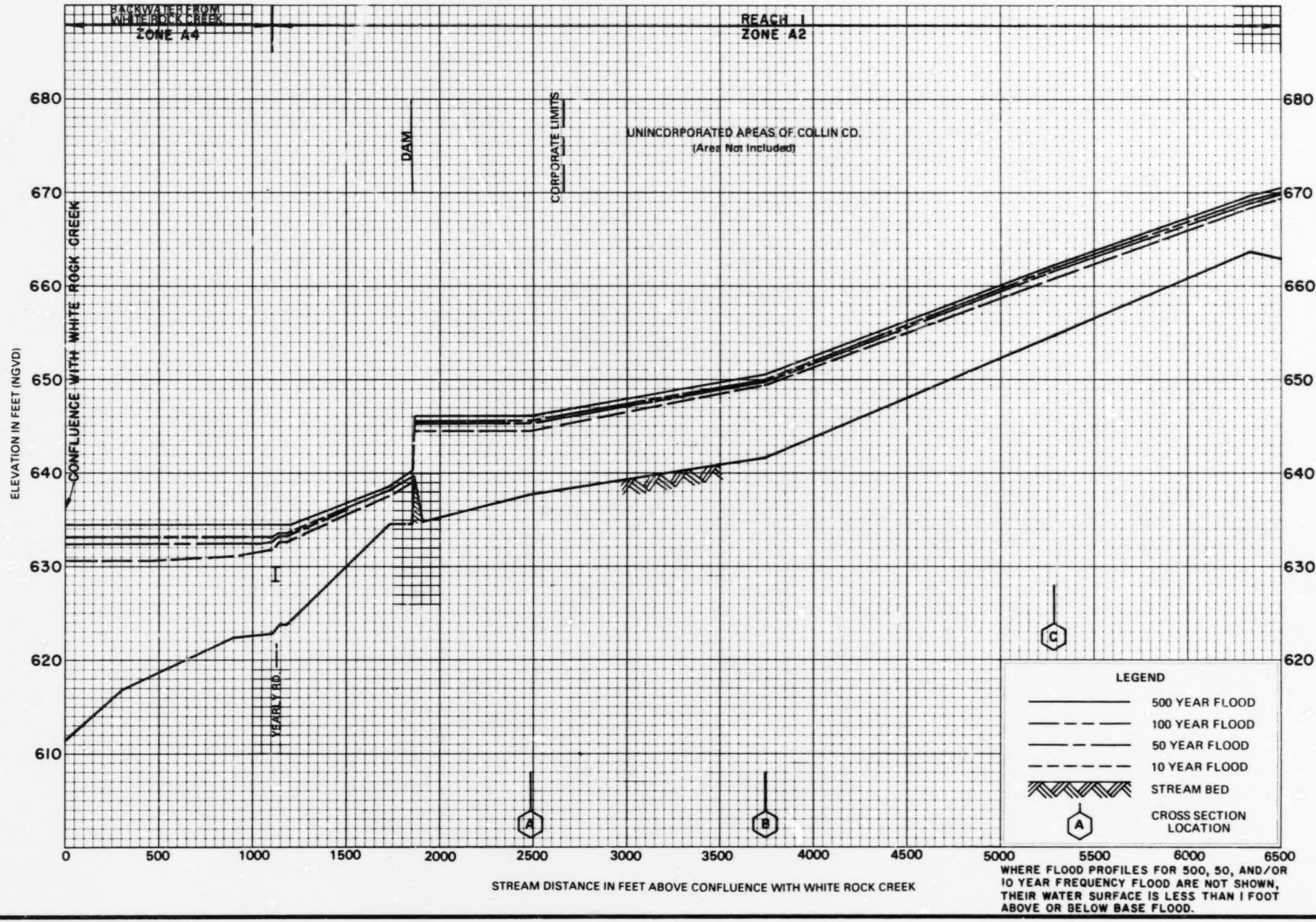
STREAM 5B26

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

64P

BEST COPY AVAILABLE



WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B27

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

65P

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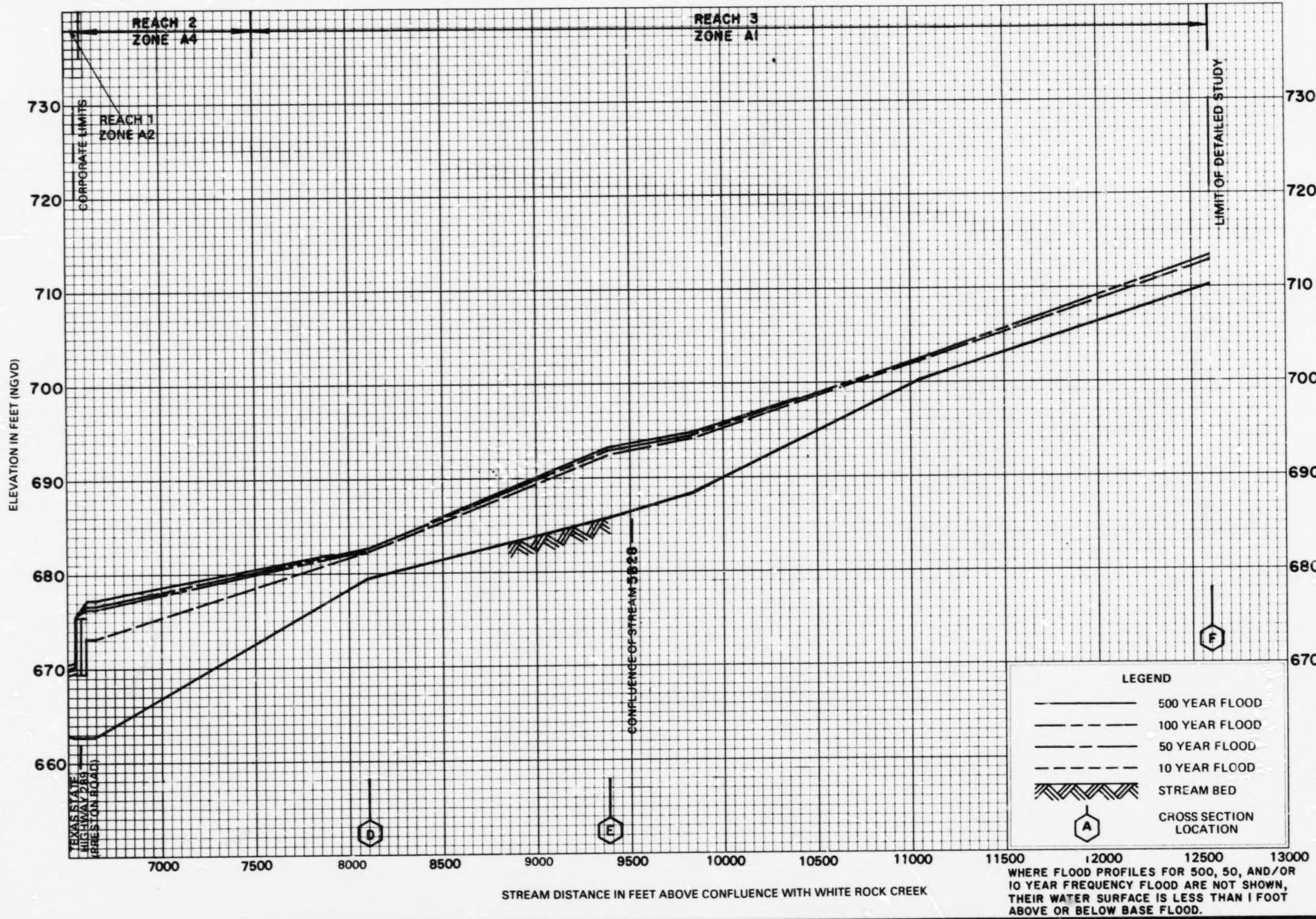

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B27

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

66P

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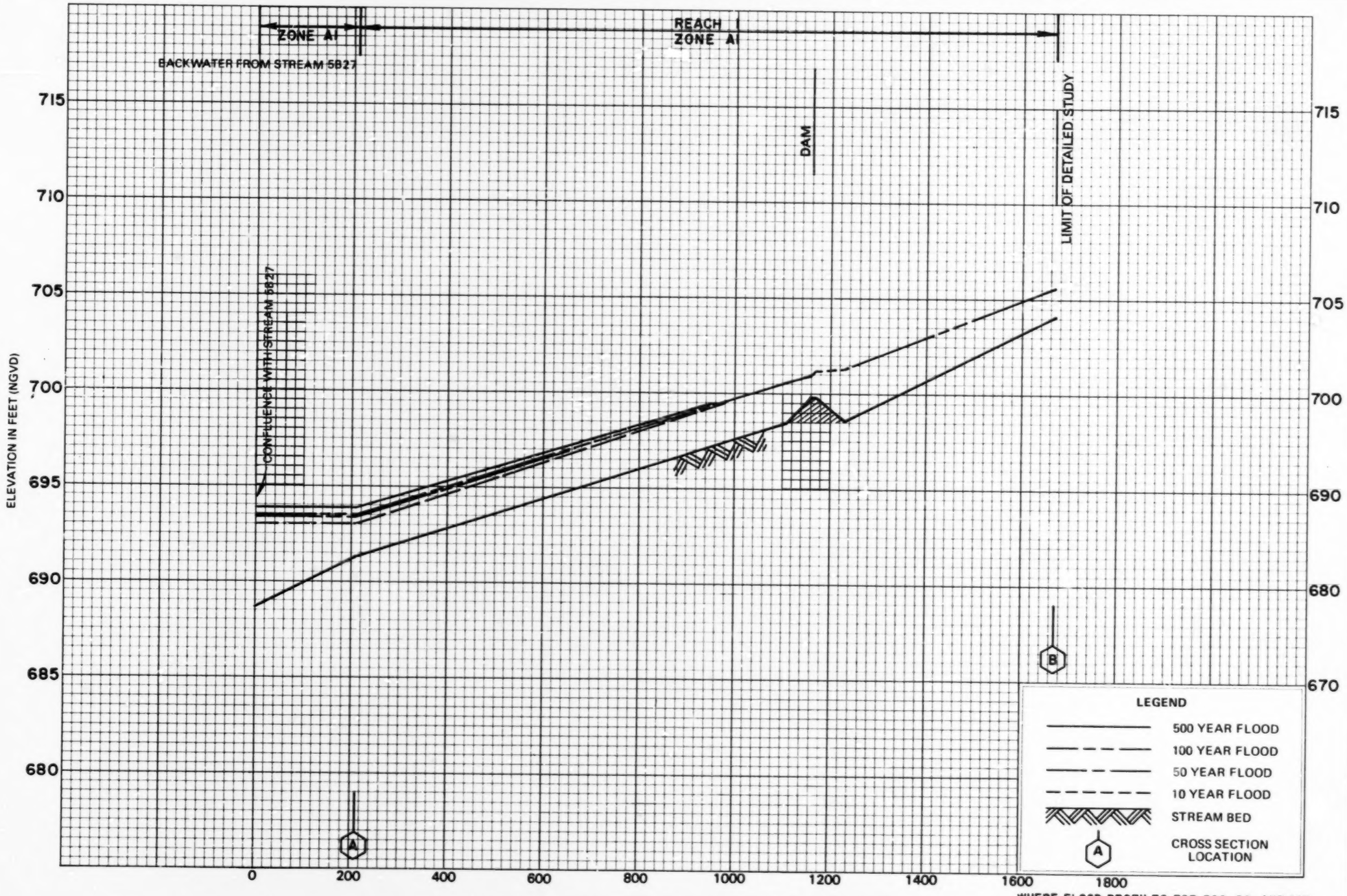


WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B28

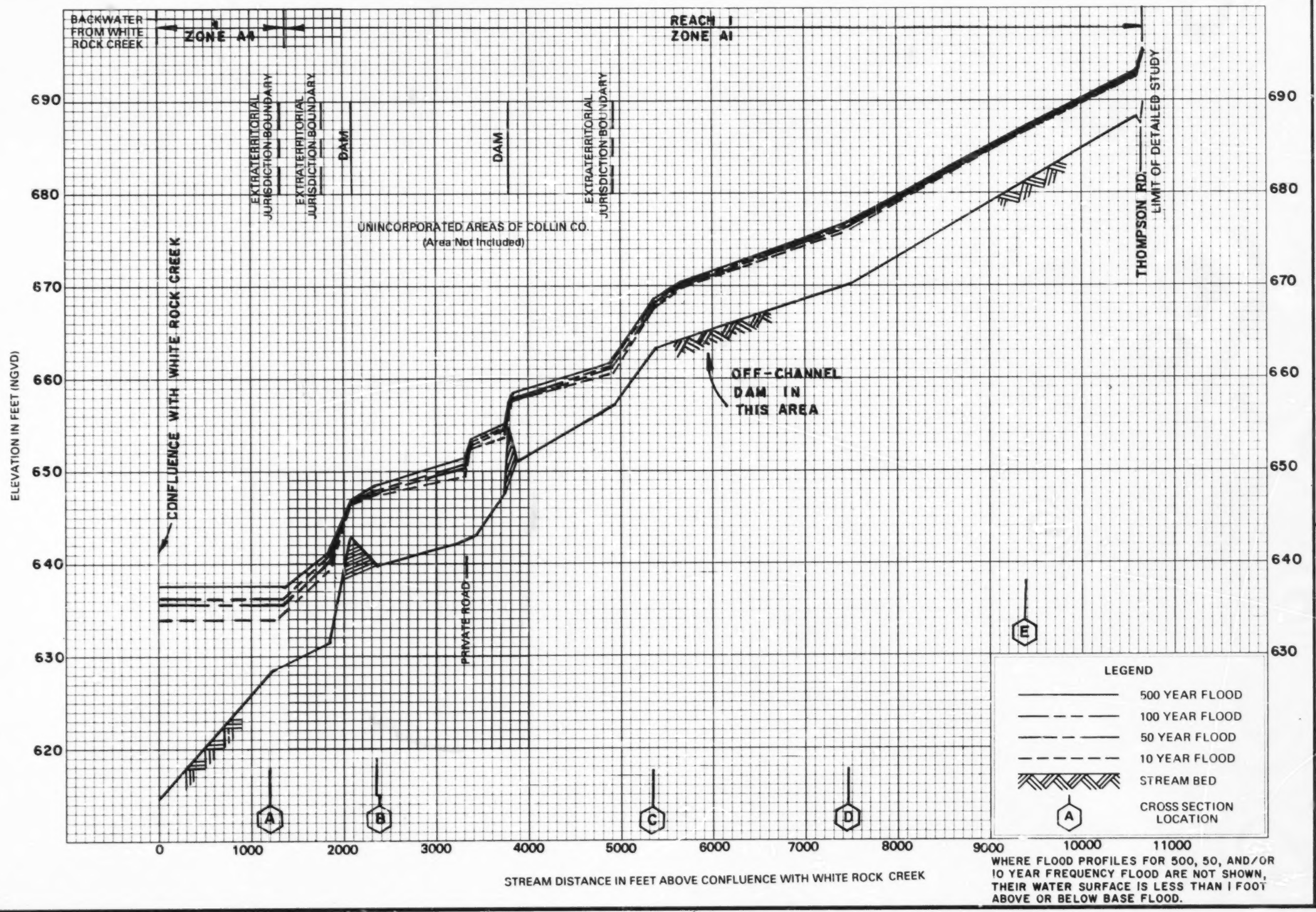
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

67P

BEST COPY AVAILABLE



WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B29

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

68P

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BACKWATER EFFECTS FROM WHITE ROCK CREEK

REACH 1 ZONE A4 | REACH 1 ZONE A3 | REACH 2 ZONE A6 | REACH 2 ZONE A6 | REACH 3 ZONE A2 | REACH 4 ZONE A1

ELEVATION IN FEET (NGVD)

CONFLUENCE WITH WHITE ROCK CREEK

TEXAS STATE HIGHWAY 289 (PRESTON ROAD)

STOCK POND IN THIS AREA *

LIMIT OF DETAILED STUDY

700 690 680 670 660 650 640 630

700 690 680 670 660 650 640 630

730 720 710 700 690 680 670 660

730 720 710 700 690 680 670

A B C D

0 1000 2000 3000 4000 5000 5000 6000 7000 8000 9000 10000 11000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WHITE ROCK CREEK

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION (A)

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B30

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

69P

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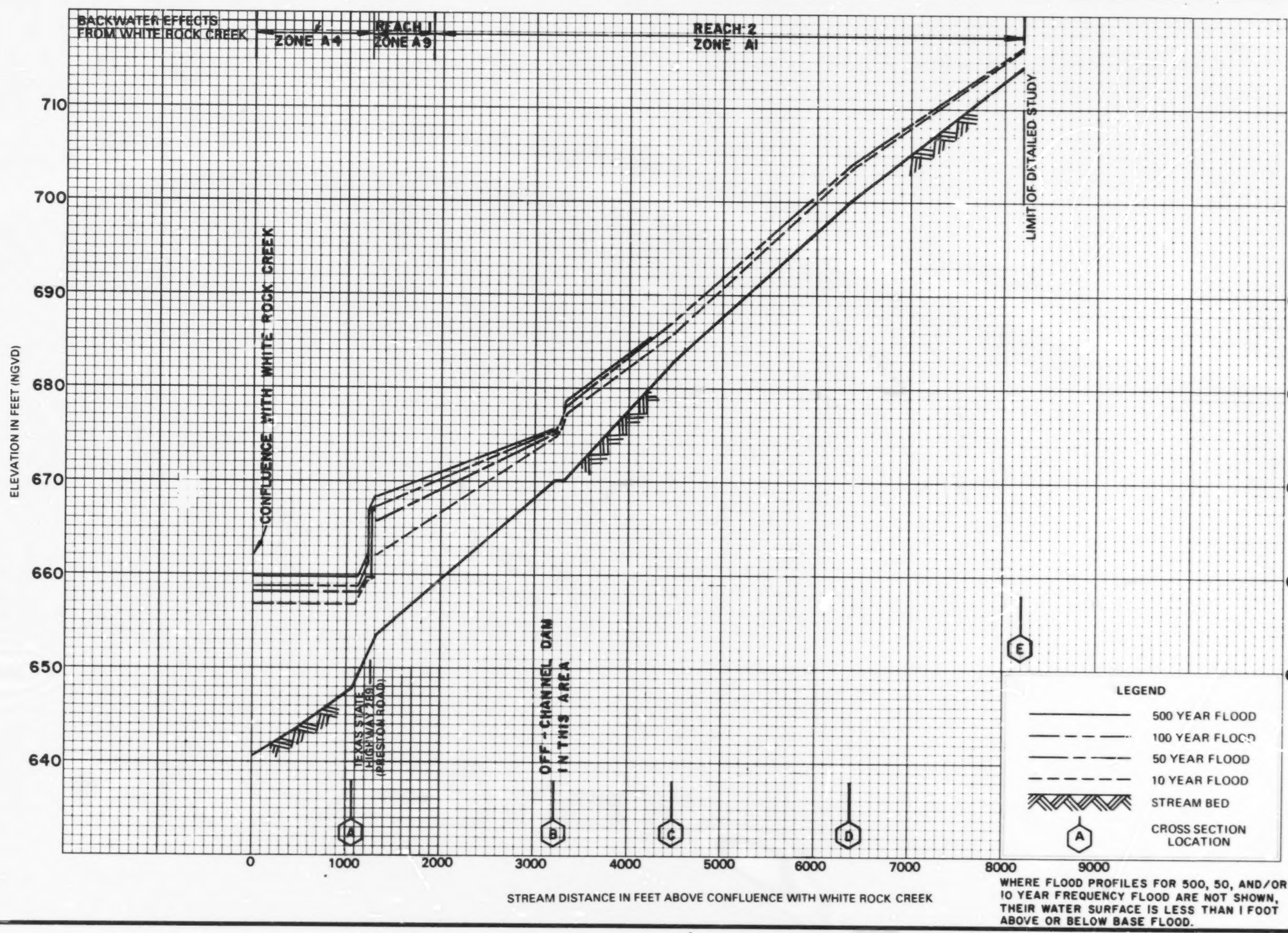

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B31

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

70P

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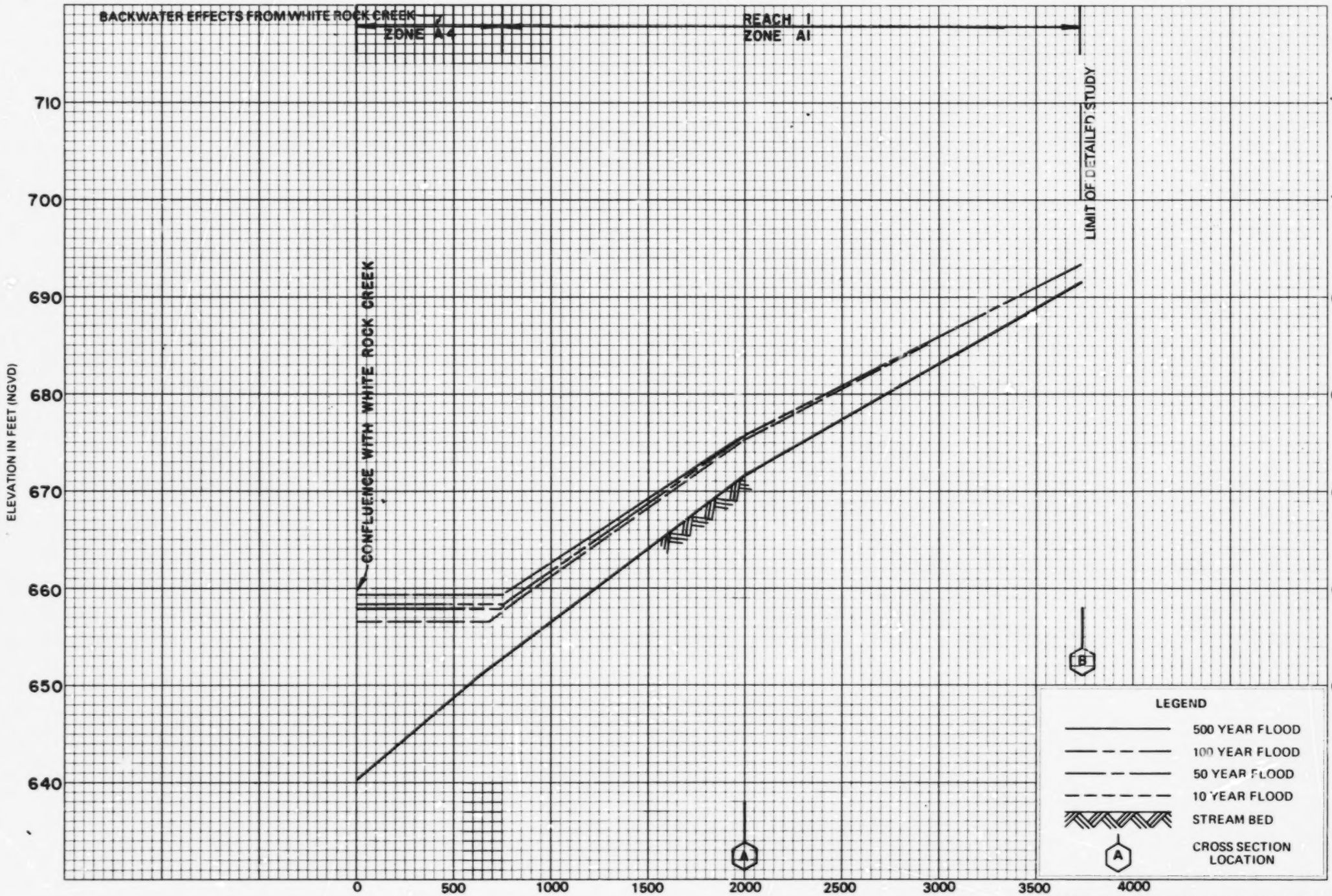

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B32

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX
(COLLIN AND DENTON COS.)

71P

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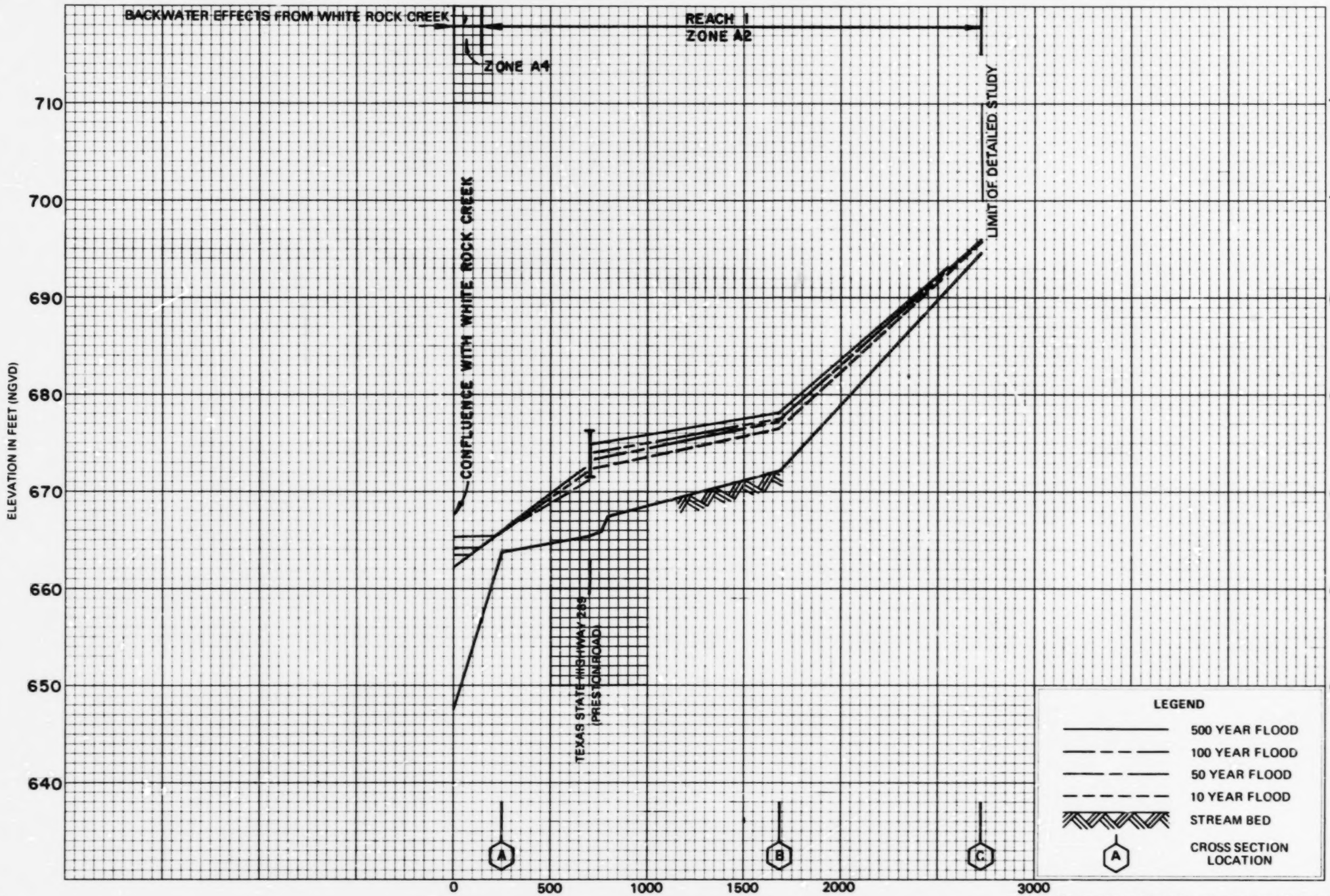

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B33

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

72P

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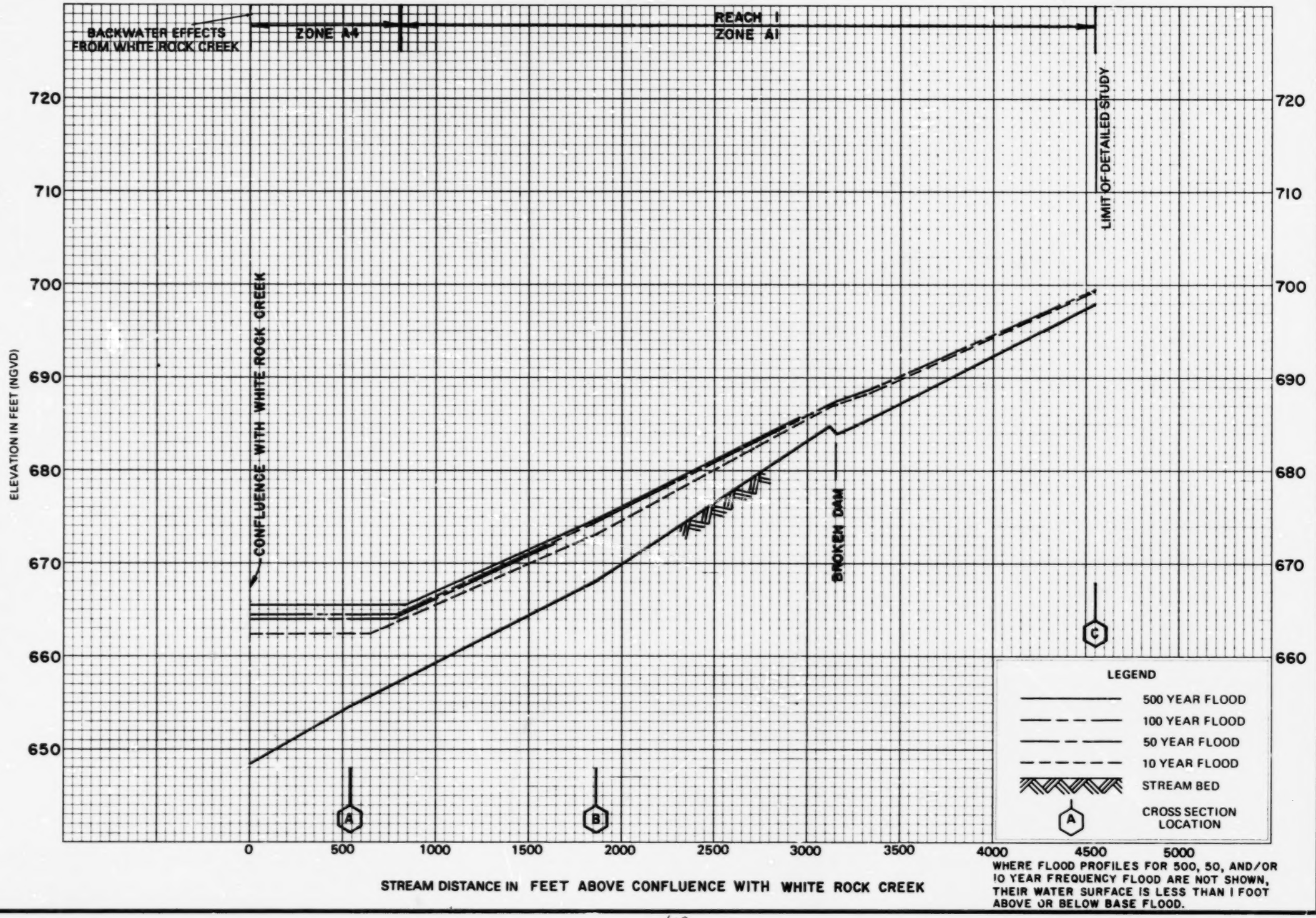

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B34

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

73P

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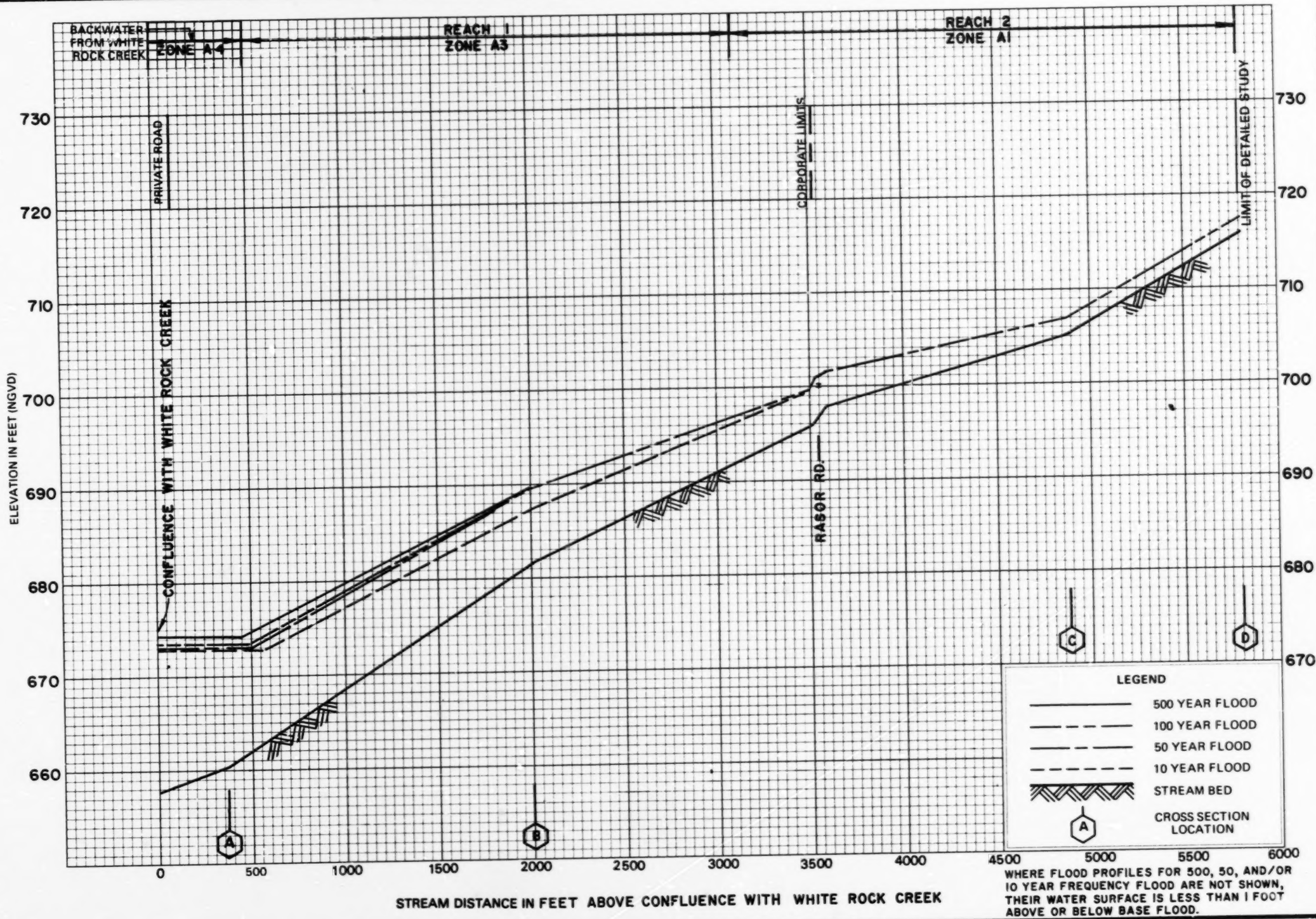

WHERE FLOOD PROFILES FOR 500, 50, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B35

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

74P

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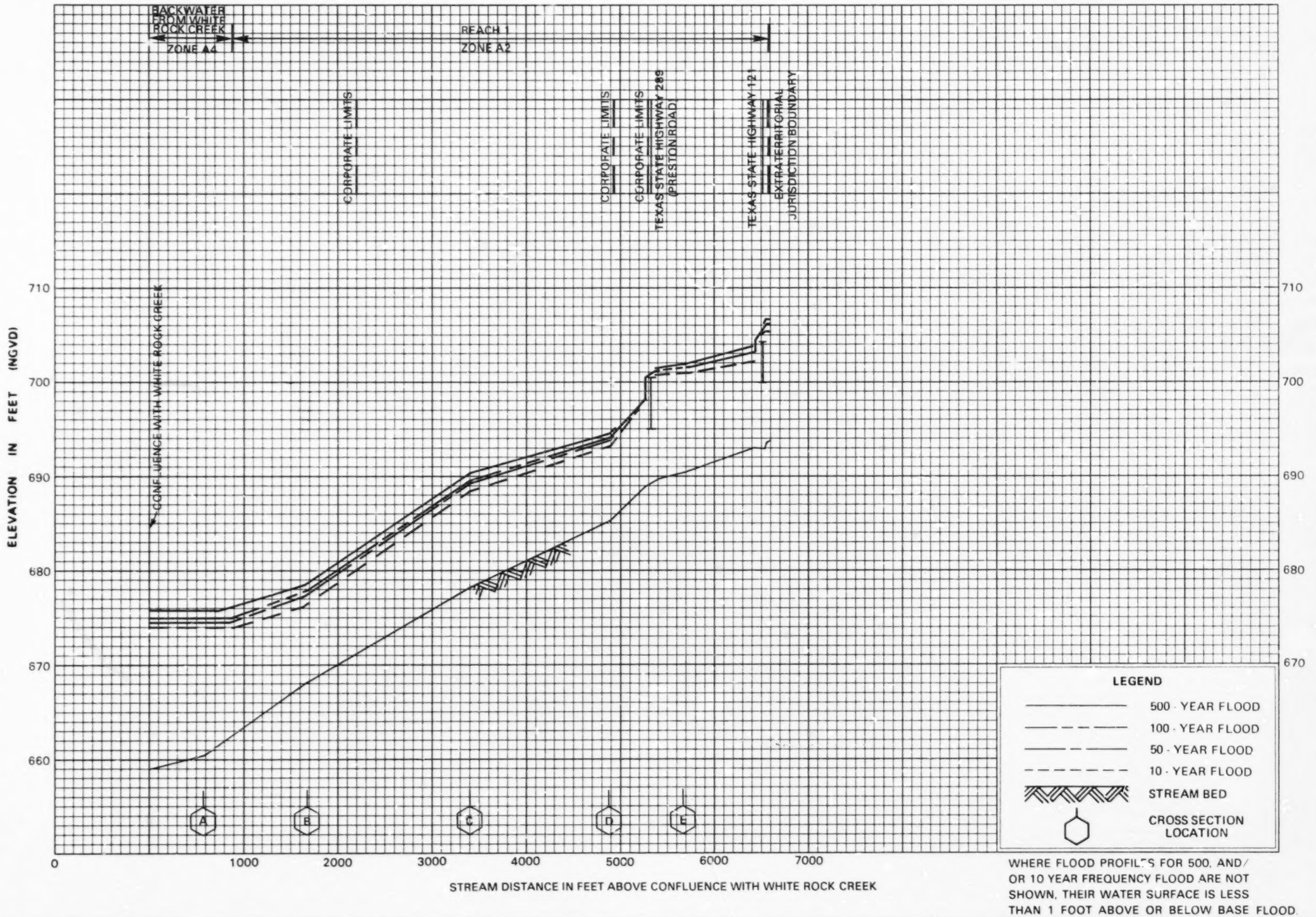

WHERE FLOOD PROFILES FOR 500, AND/OR 10 YEAR FREQUENCY FLOOD ARE NOT SHOWN, THEIR WATER SURFACE IS LESS THAN 1 FOOT ABOVE OR BELOW BASE FLOOD.

FLOOD PROFILES

STREAM 5B36

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF PLANO, TX

(COLLIN AND DENTON COS.)

75P

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